

Health Status of Minorities and Low-Income Groups: Third Edition

U.S. DEPARTMENT OF
HEALTH & HUMAN SERVICES
Public Health Service
Health Resources and Services Administration



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Bureau of Health Professions
Division of Disadvantaged Assistance





THE SECRETARY OF HEALTH AND HUMAN SERVICES
WASHINGTON, D. C. 20201

Fellow Americans:

I am pleased to introduce Health Status of Minorities and Low Income Groups, an important document that helps to focus our understanding of the breadth and scope of the health problems confronting America's minority communities and impoverished citizens.

There is a serious, deep disparity between the general population and our minority and poor citizens. Each year, while the health status of most of our citizens shows steady improvement, the same improvements are not as evident for our minority and low income groups. In many cases, there has been an actual decline. Such a disparity is clearly unacceptable.

Certainly, the entire ethnic mosaic of our country -- Whites, Blacks, Hispanics, Native Americans, Asian Americans and all of our people -- must have access to care. Health improvements must be shared by all sectors of our society, and ethnic disparities must be eliminated through a careful understanding of the facts, an enhanced emphasis on healthier living, and effective use of government and private sector programs that help our citizens to stay healthy, or, when ill, to help provide comfort and high quality care.

That is why this document is so important. In the hands of health care professionals and policymakers, this information can assist them to target resources to those in need, and to fashion personal, medical and governmental responses that will better meet the needs of our minority and low income citizens. This information will be a valuable tool for mobilizing the strengths of our private and public sectors to improve the health status of our minority citizens and people with low incomes.

I highly recommend this document to each American. It can be a source of insight and knowledge, leading to understanding and renewed commitment. Please take the time to study these findings carefully, because our work -- individually and collectively -- can help to end infant mortality, disability, disease and premature death.

A handwritten signature in dark ink, reading "Louis W. Sullivan".

Louis W. Sullivan, M.D.
Secretary



Foreword

The health status of minority and other disadvantaged populations in this country continues to fall far short of the levels that access to health services has made possible for most Americans. These persistent disparities in the health status of disadvantaged populations and other Americans have prompted intensified efforts in the Department of Health and Human Services to deal with the factors responsible.

The Health Resources and Services Administration, as the agency of the Public Health Service responsible for developing national health resources and supporting the delivery of health services to disadvantaged populations, has an important role in the efforts to address these problems.

Improving the relatively poor health status of minority and other disadvantaged

populations requires the continual assessment, monitoring, and understanding of many factors relating to the health status of these groups. This publication is the third in a series of reports which have compiled current data from a number of different sources. Its purpose is to provide a reference with which minority health problems can be identified and assessed.

We are proud to dedicate this work to a greater understanding of the issues and a more successful effort in narrowing the gap between the health status of the disadvantaged and other Americans.

Robert G. Harmon, M.D.,
M.P.H.
Administrator
Assistant Surgeon General
Health Resources and
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Assembling and analyzing the wide variety of data included in this book required the cooperation and assistance of many people. This edition was written by Policy Research, Inc. (PRI) under contract with the Health Resources and Services Administration. Within the DDA, Ms. Ernell Spratley had primary responsibility for directing and monitoring the project. As Principal Investigator, Ms. Irene Jillson-Boostrom, President of Policy Research Inc., provided overall guidance and direction for preparation of the report; she also prepared drafts of or revised several chapters. Dr. Monroe Lerner, Professor, Division of Health Policy, the Johns Hopkins School of Hygiene and Public Health, served as Associate Principal Investigator and was primarily responsible for two chapters of the report. Ms. Ann Meadow served as Project Director for the first year of the project and was primarily responsible for or revised several chapters of the report. Dr. Mae Thamer extensively revised individual chapters and coordinated the production of the final draft of the report. Dr. Susan Berkowitz, Dr. Brenda Gray and Dr. Jill Smith prepared drafts of individual chapters. Ms. Christine Baluck and Mr. Michael Deets served as Research Assistants and Ms. Baluck coordinated updating

of the data. Ms. Cora Gordon provided editorial assistance. Dr. Keith Smith, Ms. Ruth Smith, and Dr. Clara Schiffer reviewed and commented on complete drafts of the report. Dr. Eugene Boostrom reviewed and commented on drafts of all of the chapters.

The following individuals each reviewed the draft chapter of the report of their area of expertise: Dr. Henry Montes, Kaiser Permanente Foundation, Dr. Moses Pounds, University of Maryland, Dr. Leon Robertson, Dr. Robert Siegel, Maryland Department of Health and Mental Hygiene; and Dr. Morton Kramer, Dr. Pearl German, Dr. Diane Rowland, Dr. Sam Shapiro, Dr. Gordon Smith, Dr. Donald Steinwachs, and Dr. Jonathan Weiner, all of whom are faculty members of the Johns Hopkins School of Hygiene and Public Health.

This report also benefitted from the critical review of the chapters by a number of experts in various fields within HRSA and several other agencies and organizations. Known reviewers (in the order within this book of the chapters they reviewed) include: Ms. Bettie L. Hudson (NCHS), Ms. Barbara Wilson (NCHS), Dr. Michael McGinnis (OASH), Dr. Wendy Baldwin (NICHD), Ms. Susan Newcomer (NICHD), Dr. Ann Koontz (HRSA), Ms. Selma Taffel (NCHS), Dr. William Mosher (NCHS), Dr. M. Alfred Haynes (Drew/Meharry/Morehouse Consortium), Dr. Deborah M. Winn (NCHS), Dr. Harry Rosenberg (NCHS), Mr. Jeff Maurer (NCHS), Dr. Deloris Parron (ADAMHA),

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Chapter I

Introduction

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A. Background and Purpose

There is an ongoing need on the part of the Health Resources and Services Administration (HRSA) and other agencies and organizations in the public and private sectors for data which demonstrate where the disparities exist between the disadvantaged and advantaged segments of our society, as well as information on the effectiveness of programs aimed at reducing those disparities. Within HRSA, the Division of Disadvantaged Assistance (DDA), of the Bureau of Health Professions, has as its mission the initiation and development of programs which promote and assure equity in access to health resources. The Division administers the Health Careers Opportunity Grant Program (HCOP) and the Centers for Excellence (CFE) Program; compiles, analyzes, and disseminates data on the health professions training and the health status of the disadvantaged; and coordinates special Presidential, Departmental, and other initiatives for enhancing health resources opportunities for the disadvantaged.

When the various organizations in the then Health Resources Administration in the mid-1970's found that they were in need of large amounts of data on the health status of disadvantaged populations on a continuing basis, they asked the Office of Health Resources Opportunity (OHRO)—the predecessor organization to the Division of Disadvantaged Assistance—

to provide those data organized in a systematic manner. Two previous editions of this report have been issued; the first in 1979 and the second in 1985. Both were prepared under contract by the Centers for Health, Education, and Social Systems Studies (CHESS).

In 1988, a contract was let to Policy Research Incorporated to produce this third, expanded edition of the report, which includes two new chapters: Human Immunodeficiency Virus Infection, and Health of Older Americans.

It is impossible to anticipate all the ways in which a large pool of data, such as that provided in this report, may be used. Each segment of the government involved in health care must make decisions on policy issues, resource allocation, conceptualize intervention programs, and evaluate programmatic efforts. To do so, each must have data of the sort compiled in this report. Many individuals and organizations outside of government are also involved in the delivery of health care services or in the analysis, evaluation, and research regarding the health care system. This report attempts to respond to the general need for data by such a diverse audience with a wide range of purposes.

Two types of information are presented in this report: (1) primary and secondary data from published and unpublished sources; and (2) analyses of published and unpublished literature. Substantial numbers of additional data sets which are newly available since the preparation of the last report have been used. Tables

included in the previous edition of the report have been updated to the maximum extent possible. In those instances in which the data included in the previous edition are no longer collected or published in the form presented, data which could reasonably substitute have been utilized.

It is beyond the scope of this report to describe the methodologies used to gather the data for each of the studies cited in this report. However, where deemed necessary in order to better elucidate a complex issue, brief descriptions of methodologies used in studies of a particular data set have been presented. For readers who wish to interpret the data themselves, this source book is meant as an initial reference work. It is suggested that the reader review the original sources for an understanding of the data collection methodologies for the data presented in this report.

B. Methodology and Sources

The data gathering for this project involved two streams of effort: (1) conducting literature searches and retrieving published and unpublished documents to supplement the PRI library on health services research and health policy in order to prepare the literature review for each chapter; and (2) updating the tables included in the previous report, and identification of additional data sources to supplement or be used in lieu of those

data. The literature search began with a review of relevant documents in the PRI library (which includes a collection of current government reports and documents) and included an extensive computer-based search of National Library of Medicine sources. Articles were retrieved from The Johns Hopkins School of Hygiene and Public Health and the University of Maryland School of Medicine libraries. The extensive search resulted in several thousand citations which were reviewed for their relevance to this project. More than 1,500 articles were retrieved, and nearly 100 books and special government and private sector documents were reviewed. Discussions were also held with both government and private sector individuals representing a wide array of relevant expertise and interests, in order to identify appropriate published and unpublished data and information. Occasionally, where it was appropriate and necessary, PRI staff analyzed raw data and made additional calculations or tabulations in order to further develop important information. However, most of the analyses included in this report are based on published data as they were compiled by the organization which is the primary source for the data. A large number of organizations and individuals provided data which have been used in this third edition. Citations for the sources of data are provided throughout the report.

C. Data Issues: Availability and Limitations

The previous editions of this report have decried the paucity of data available by race and ethnicity, in particular, data for major causes of mortality and morbidity. However, more than ten years after the first edition was published, the availability of data has not improved substantially. While data are increasingly available for race and ethnicity, the breakdowns in published sources are often for "White" and "All others", or "White, non-Hispanic" and "Black, non-Hispanic". Rarely are national data more disaggregated than for these categories. Thus there are virtually no national data on the health status of Asian Pacific Islanders and Native Americans and only a limited amount on Hispanics. The Indian Health Service publishes an annual report of updated statistics for Reservation States which has been used extensively in this report. Unfortunately, the data in that report are often not directly comparable with other national data. An exemplary report of health statistics is the monthly report of Human Immunodeficiency Virus data produced since February, 1989 by the Centers for Disease Control (CDC). Most of the data in that report are disaggregated by the five major racial/ethnic groups (White, Black, Hispanic, American Indian and Asian/Pacific Islander).

Regrettably, while some national data are disaggregated by age and sex for racial or ethnic groups, rarely are they disaggregated by education or income status. This would shed light on the relative contribution of these variables

to differences in health status or health services utilization among different populations. In many cases, the unavailability of these data makes it necessary to compare among racial or ethnic groups without considering other factors which are correlated with health status and health services utilization and access.

Not only have the improvements in health status data collection and classification by race/ethnicity and income been minimal over the past decade, data on some previously available health status indicators are no longer available. An important example is the national survey of immunization coverage (conducted by the Centers for Disease Control), which has not received funding since 1985. This important indicator, used worldwide to measure national programs for child survival, had shown serious disparities by race in the U.S. until 1985. Unfortunately, since that year there are no reliable alternative data which have been available to determine if changes have occurred in the past five years.

D. Definitional Issues

A number of terms relevant to this report can be defined and interpreted in varying ways. In this section, both the problems and issues involved in defining some of the more important terms and the definitions used for purposes of this report are presented.

1. *Disadvantaged*

Health-related and other laws and policies in the U.S. have defined "disadvantaged" in various ways, but for the purposes of this report the term includes those who, by virtue of racial

or ethnic heritage, economic status, or some other factor, do not have equity in access to the health care system. Consistently, health status has been associated with income status, educational attainment, and race or ethnicity. However, there is uncertainty regarding the degree to which race and ethnicity are confounded by the first two variables.

Unfortunately, although both the public and private health sectors in the U.S. produce significant amounts of data regarding health status of the American population, much of the data is not disaggregated by variables which could be used to indicate disadvantaged status (e.g., income, employment, health insurance coverage status, or race/ethnicity). In a health care system, such as that in this country, in which fee-for-service is the predominant form of health care financing, the ability to pay for health care services is an important indicator of advantage in accessing the system. According to various estimates, between 31 and 40 million Americans are without any form of health insurance and have only a limited ability to pay for needed health care services. The out-of-pocket health care costs to the individual in the U.S. are among the highest in the world.

The variables that have been used in the analyses throughout this report as a means of comparing the health status of disadvantaged populations with that of populations who are not disadvantaged include: race or ethnicity, income, sex, age, and education. The definitional and analytical issues associated with these

variables are discussed in the remainder of this section.

The problem of the paucity of data of sufficient detail with respect to race/ethnicity and income and education as it relates to comparing the health status of those who are disadvantaged with the rest of the population cannot be overemphasized. Differential income and educational levels within the racial and ethnic minority groups and among White Americans act as confounding variables and distort both racial and ethnic comparisons and income disparities. Moreover, while the published literature reflects an increasing interest in racial and ethnic disparities in health status and services availability, there are minimal published data on health status by income status and race/ethnicity. This makes it extremely difficult, for example, to describe the health status of poor White Americans or the affluent among various racial/ethnic minorities.

2. *Race and Ethnicity*

This is one of the more difficult demographic categories to define and use in analysis because there is no general consensus for classifying subpopulations. Moreover, the definitions have changed over time; three decades ago, the United Nations recommended use of the term "ethnic group", rather than "race". Today, most health services researchers utilize the classification in the collection of epidemiologic data, and it is considered useful as a means of providing data that can be used as the basis for more detailed etiologic studies. (1) The system of racial/ethnic classifications issued by the Office of Management and Budget (OMB) in 1975 for Federal Government data systems

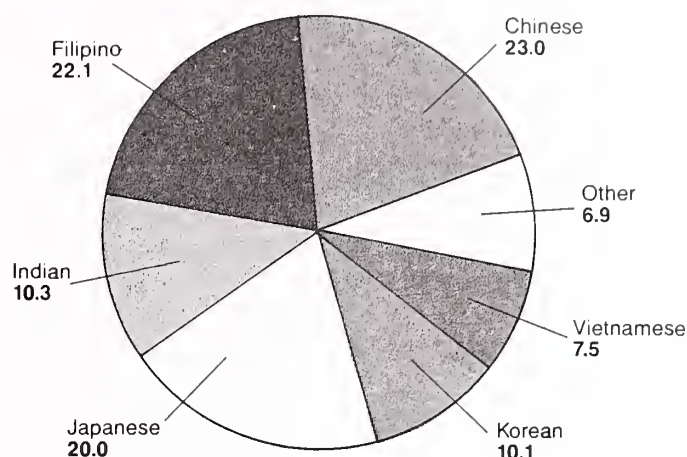
assumes that all persons can be placed in one of five mutually exclusive racial/ethnic categories, which are: American Indian or Alaskan Native, Asian or Pacific Islander, Black (not of Hispanic origin), Hispanic, and White (not of Hispanic origin). For the purpose of discussion in this report, racial minorities are defined as Black Americans, Native Americans (American Indians or Alaskan Natives) and persons whose origins are Asia and the Pacific Islands. Hispanic Americans are referred to as an ethnic minority group (see below).

The term Native American includes those frequently referred to as American Indians, Eskimos and Aleuts from Alaska and neighboring islands. American Indians (less than 1 percent of the U.S. population in 1980, the most recent year for which data are available) are comprised of extremely diverse subgroups with varying cultures. Similarly, those who are grouped as the Asian/Pacific Islander minority group (1.5 percent of the population in 1980) have significantly different cultural heritages and vary considerably in the degree to which they are disadvantaged in the U.S. Data from the Bureau of the Census indicate that Chinese, Filipino, and Japanese comprised the bulk of the Asian population in this country in 1980 (Figure 1). Moreover, persons from these groups are not as likely as persons from some other Asian/Pacific Islander categories to have incomes below the poverty level. Thus aggregated data for this group (when they are available) generally reflect the status of the more advantaged subpopulations.

While Black Americans are the largest racial minority (12 percent of the population in

Figure 1

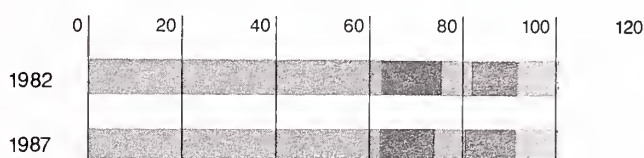
Percent distribution of the Asian/Pacific Islander population by origin 1980.



Source: Compiled by the Division of Disadvantaged Assistance based on data from the Bureau of Census. 1980 Census of Population. *General Population Characteristics* Vol. 1 PC 80-1-B1.

Figure 2

Percent distribution of the Hispanic population by origin, 1982 and 1987.



Source: Compiled by the Division of Disadvantaged Assistance based on data from the Bureau of Census. *Current Population Reports. Series P-20, No. 434.*



1987), Hispanic Americans are the largest ethnic minority population in the U.S. (8 percent of the population in 1987). Hispanic Americans include individuals of White, Black and American Indian origins, and others of mixed racial parentage. However, more than 90 percent of Hispanic are classified as White in racial categorizations. The characteristics which this heterogeneous population have in common are: (a) they either have immigrated from, have ancestors from, or have

surnames associated with countries that were once under Spanish dominion; and (b) most of them are still Spanish speaking (first or second language). The largest subgroup of Hispanics is the Mexican American population; Puerto Ricans and Cubans represent the second and third largest subgroups (Figure 2). More recent immigrants from Central and South America are a rapidly increasing subgroup among the Hispanic population. This group increased 40 percent in the period from 1982 to 1987 compared with a 22 percent increase in the

Hispanic population as a whole during that time. (2) These Hispanic subgroups are often found to differ substantially among each other with respect to health and socioeconomic characteristics.

In this report, the terms White American, Black American, Native American, Hispanic American, and Asian American are used, unless there is a direct quotation or extrapolation from tables or documents which use other terminology (e.g., American Indians in lieu of Native Americans). Insofar as possible, negative descriptors (e.g., non-White, non-poor) have not been used, unless the source data were classified in this manner. The term African American, which is increasingly used in lieu of Black Americans, has not been used because none of the data available are reported using this terminology.

3. Age

For the most part, tables and figures in this document present age-adjusted data. Where available and appropriate, age-disaggregated data are also presented throughout the chapters in this report. Because health of older Americans (who comprised 12 percent of the population, or 29 million persons in 1987) is of increasing concern, a separate chapter of this report is devoted to that population. The health status of children and adolescents—those under 17 years of age (26 percent of the population in 1987) is also of paramount interest. The younger and older members of certain minority groups are at particularly high risk for poor health, and are most disadvantaged by virtue of financial barriers to care. This

report addresses the problems of disadvantaged younger and older persons by highlighting their health status wherever possible.

E. Health Status and Its Measurement

The concept of health status involves several difficult methodological issues: the definition of health status, the measurement of health status, and problems of data collection methodologies used to gather relevant information.

Most of the health status indicators in use by most countries, and published in comparative studies of health systems, are based on the medical model, and focus on measures of ill health, rather than on proxy measures for health. Moreover, they focus on mortality data, which are more readily available and reliable than morbidity data. Such measures include, for example, infant mortality, crude death rates, age-adjusted death rates by disease category, and life expectancy at birth and at age 65. Crude birth rates and birthweight are also frequently used in cross-national comparisons. While mortality data are generally reliable in the U.S., there are definitional problems with certain

classifications (e.g., infant mortality). These are discussed in detail in the Vital Statistics chapter of this report. National morbidity data are, for the most part, based on self-report (e.g., from sources such as the National Health Interview Survey or the Economic Catchment Area studies of mental health conditions) or derived from health facility and provider utilization data. There are problems with both of these sources. In the first case, national household surveys may underrepresent disadvantaged persons who are not included in such surveys; this includes:

- (1) those who are homeless every night (estimated to be 735,000 in 1988) or who were homeless for at least one night in 1988 (estimated to be between 1.3 and 2 million);
- (2) institutionalized Americans (prisons, mental institutions, and longterm care facilities); and
- (3) those who live in some type of temporary or shelter facility.

Moreover, the questions included in the surveys may not be understood (as a result of educational attainment or language barriers), or the respondents may underreport information such as illicit drug use, or

overreport information such as good health habits. Surveys which include physical examinations conducted by health professionals may be the most reliable sources of information on morbidity, but they require intrusive examination procedures which may introduce a bias because of cultural factors. In addition, an observational bias based on ethnic and racial stereotyping is sometimes seen in diagnosis. This is particularly evident in diagnosing mental health conditions.

Notwithstanding these problems, the U.S. public and private sectors collect substantial amounts of information that can be used to describe, albeit not completely, the health status of disadvantaged persons.

F. Contents of This Report

Each of the subsequent chapters includes an overview of the findings and a discussion of data sources and their limitations. The data and information are presented by race and ethnicity, and by income status where available. For the most part, the chapters focus on national data, using regional studies to supplement

information. In the case of Chapter IX, Mental Health, the primary source of information on diagnoses by race and ethnicity is the Economic Catchment Area study, conducted in five regions of the country in 1981–1982. The most recent information available has been used throughout the chapters, but there is considerable variation among the data sources in the latest year for which data are available.

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2. Percent distribution of the Hispanic population by origin, 1982 and 1987.



Chapter II

Vital Statistics

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A. Introduction*1. Overview*

The most recent year for which population data for detailed racial and ethnic subgroups are available is 1980. In that year, Blacks constituted the largest minority group in the United States, 11.7 percent of the population. Hispanic Americans and Asian and Pacific Islanders were the second and third largest minority groups, making up 6.4 percent and 1.5 percent of the population, respectively. American Indians comprised less than 1 percent of the population. Population breakdowns for more general racial and ethnic groups are available for more recent years; as of 1987, Black Americans represented 12.1 percent and Hispanics 8 percent. From 1980 to 1987, the Hispanic population increased by 30 percent, more than five times the increase for non-Hispanic populations.

The age distributions of the various minority groups differ markedly from those of the remainder of the population, both because minority populations have higher birth rates and Hispanic immigrant populations have lower proportions of older persons. Blacks, Hispanics, and American Indians are on average much younger than the White population, with larger proportions of their populations in the younger age groups and much smaller proportions at the older ages. Higher proportions of these minorities have incomes below the poverty level; they also have lower median

incomes and educational levels than Whites. National data on the economic characteristics of Blacks and Hispanics show that these groups have higher unemployment levels than Whites, higher proportions of female-headed households, and lower levels of home ownership. Asian and Pacific Islanders, in contrast to the other minorities, have a median income and average educational attainment higher than the White majority. However, some researchers have indicated the existence of a bipolar pattern in many socioeconomic indices for Asian Pacific Islanders that is closely linked to their nativity, duration of residence in the United States, and degree of acculturation. (1)

The birth rates of Indian and Alaska Native, Hispanic, and Black Americans are considerably higher than those of the White population. The highest birth rates occur among American Indians, followed by Hispanics (especially Mexican Americans and Puerto Ricans), and then Blacks. The higher fertility rates of Blacks and Hispanics compared with Whites indicate that their high birth rates are "real" and not merely a consequence of their having higher proportions of women of childbearing age. Higher proportions of American Indian, Black, and Hispanic mothers compared to White mothers have low birthweight babies, have babies at very young ages, and are unmarried when giving birth.

Since 1900, age-adjusted mortality rates in the United States have decreased rapidly, and all minority groups have experienced

improvements. Although the decreases over time have been somewhat more rapid for Blacks so that the Black and White differences narrowed somewhat, the age-adjusted all-cause mortality rate is still over 50 percent higher for Blacks than Whites. Blacks have higher mortality rates than Whites for most of the major causes of death (heart disease, stroke, cancer, and others), but especially for homicide for which the rate for Blacks is six times higher than that for Whites. The age-adjusted death rate for all causes for American Indians is essentially the same as for Whites and they have lower death rates than Whites for most of the chronic diseases. However, American Indians have much higher death rates at the younger ages, especially from chronic liver disease and cirrhosis, and from accidents (motor-vehicle and all other), both strongly related to alcoholism, and also from diabetes.

Life expectancy was higher for Whites (75.4 years) than for Blacks (69.4 years) in 1986. Like the slight narrowing of the racial gap with respect to mortality, however, the ratio of Black to White life expectancy has also narrowed from 1.12 in 1970 to 1.09 in 1986. White life expectancy exceeded Black by 7.6 years in 1970, this figure dropped to 5.6 in 1983 and 1984, then rose to 6.0 in 1986.

Family-building through marriage has become less prevalent in this country ever since World War II; the

marriage rate has decreased, at the same time that the divorce rate has increased significantly. However, between 1975 and 1984 the marriage rate increased from 10.0 marriages per 1,000 population to 10.5 per 1,000, thus returning to the 1970 rate. The percent currently married is much lower for Blacks than Whites, and the percent divorced much higher. The percent of the Hispanic population currently married has also declined in recent years, but only from 1980 to 1987 (the most recent year for which data are available), while it had increased from 1970 to 1980. The percent of all Hispanics who are currently married is much higher than the comparable percent for Blacks and close to that for Whites.

2. Data Sources and Their Limitations

As a first look at the health status of the disadvantaged, the data in this chapter provide a basis for the discussion of other health areas covered in subsequent chapters. It begins the process of addressing the basic concern of this book, i.e., do the disadvantaged differ from the rest of the population in health status, access to the health care system, and expenditures for health care, and has the comparative position of the disadvantaged changed in recent years? The most recent year for which certain detailed information are available by racial and ethnic subgroups is 1980. When more recent data are available, they are presented.

The chapter begins with a description of the

demographic characteristics of the American population and some of its largest racial/ethnic minorities for whom data are available—Blacks, Hispanics, and American Indians and Aleuts. Next, the vital statistics of the general population and, in contrast, the minorities are discussed. The data of vital statistics, covering births, deaths, marriages, and divorces, are commonly used to assess the health, growth, and structural changes in populations.

Births lead to population growth and renewal, while death is the most severe outcome of ill health. Marriage rates, in addition to their relationship to birth rates and to health, are often indicative of and consequent upon economic trends. Births, deaths, and marriages, along with the related measures of fertility, life expectancy, and divorce, are the basic measures used in this chapter to describe the disadvantaged relative to the remainder of the population.

Income and education are generally associated with health status, and these variables may impact what are described as race and ethnicity differences. Thus, low-income persons and minority group members (Blacks, Hispanics, and American Indians, for example) are usually in poorer health. Because there is so much more data available on health status by race or ethnicity than by income or education, race or ethnicity are often used as proxy indicators of socioeconomic status. Many examples of both the poorer health status of low socioeconomic status groups and minorities, and of the use

of race/ethnicity as a proxy for socioeconomic status indicators, are found throughout this book.

An early classic work by Kitagawa and Hauser (2) showed the inverse relationship of mortality to socioeconomic status, and data presented in later chapters of this book suggest that the relationship remains generally unchanged. For some diseases, however, morbidity and/or mortality increase with income level. Some examples are incidence of breast cancer among women, positively associated with socioeconomic status, (3, 4) and mortality rates from suicide, chronic obstructive pulmonary diseases, and motor-vehicle accidents, all higher among Whites than Blacks (which may imply either a positive correlation with socioeconomic status and/or a race differential).

B. Racial and Ethnic Population Differences

This section presents data on the age, sex, and income status for the general population and for minority groups.

"Population size, age and sex structure, socioeconomic composition, and other characteristics differentiate minority groups from the White population. Because these characteristics influence health, they must be considered when assessing the health status of minority groups." (5) "In the 1980 census, 15 groups were listed in the race item on the 1980 questionnaire: White, Black, American Indian, Eskimo, Aleut, Chinese, Filipino, Japanese, Asian Indian, Korean, Vietnamese, Hawaiian,

Samoan, Guamanian, and Other." (6)

Before discussing the race and ethnic composition of the American population, some relevant census procedures are mentioned. Classification of persons by race and Hispanic origin (the latter used interchangeably here with the term "Hispanic"), is based on the self-identification of respondents. In the 1980 census, to assign a race or ethnic origin to children of mixed parentage when the family did not choose a single race, the race of the mother was assigned during editing as the race of the child. This was in contrast to the 1970 census, where the race of the father was assigned to children in the absence of a self-selected racial classification. (6)

Blacks are, and have been traditionally, the largest minority group in the United States. In 1980, with almost 26.5 million persons, they constituted 11.7 percent of the total United States population (see Table 1).

Hispanics constituted the second largest minority group in 1980, with 14.6 million persons, almost 6.5 percent of the total population. The category "Hispanics" includes persons of any race having origins in a Spanish-speaking country. This group is an ethnic rather than a racial group, and it is composed almost solely of persons who are classified as White in racial categorizations (95 percent White, 3 percent Black, 2 percent other). (7)

Next, in 1980, were the Asian and Pacific Islanders, with 3.5 million persons, comprising about 1.5 percent of the population, and with Chinese, Filipinos, and

Japanese as the most numerous subgroups. The 1.4 million American Indians constituted 0.6 percent of the total United States population.

Table 1 also shows the regional distribution of these racial and ethnic groups. In 1980 about 14 million Blacks, just over one-half the Black population of the United States, lived in the South, and Blacks constituted 18.6 percent, nearly one-fifth, of the South's total population. Smaller numbers of Blacks lived in the North Central and Northeast regions, but even so, Blacks constituted as much as 9.9 of the Northeast's population and 9.1 in the North Central.

In contrast, Hispanics, Asians and Pacific Islanders, and American Indians were all concentrated heavily in the West; 43 percent of the total number of Hispanics resided in the West, and they constituted nearly 15 percent of the region's total population. But large numbers of Hispanics also resided in the South and in the Northeast.

For Asians and Pacific Islanders, well over one-half (57 percent) in 1980 were residing in the West. Asian Indians constituted a notable exception, with the largest number in the Northeast. Over one-half of the nation's American Indians resided in the West, but with a fairly wide dispersion throughout the country.

In 1987, the most recent year for which population estimates are available, of the more than 243 million Americans, 84.6 percent were White, 12.2 percent were Black, and 3 percent were other races. (8) Hispanics constituted 7.9 percent of the population in that year. (9)

The distribution by age of the major racial and ethnic

groups in the United States is shown in Tables 2, 3, and 4. Table 2 compares the total U.S. population (all races) with Whites and Blacks for 1970, 1980, and 1986, and it also shows median ages. For all three years, much larger proportions of the Black population than the White were in the younger age groups (under 5 and 5 to 24), while Whites were more heavily represented at the older ages (45 to 64 and 65 and over).

This difference between the races is shown even more clearly by the single figure for median age of each racial group. In each year the median age was much lower for Blacks than Whites, by 6.5 years in 1970, 6.0 in 1980, and 5.8 in 1986. The median ages of both groups were increasing rapidly, but the Black increase was more rapid than the White.

Comparable data are shown in Table 3 for 1980 and 1987 for the Hispanic population, but here by sex as well as age. If the Hispanic percentage distribution and medians shown in Table 3 are contrasted with the comparable figures for Whites and Blacks in Table 2, the Hispanic population is seen to have been much younger than the White population in 1980 and probably in 1986 and somewhat younger than the Black population. But like both Whites and Blacks, Hispanic median ages were also increasing during the 1980s. The median ages for Hispanic females were higher than the comparable medians for males in both 1980 and 1987.

Table 4 shows comparable data for 1980 for the American Indian and Alaska Native population in Reservation States. This

population is even younger than the Hispanic population, with its median age at 22.6 years, compared to 23.2 for Hispanics in 1980. There are also sizable differences in population distribution in the youngest and oldest age categories.

C. Socioeconomic Characteristics

Some social and economic characteristics of the population by race (White and Black) and Hispanic origin are shown in Table 5 for 1987. This table shows educational attainment, measured by years of school completed for persons aged 25 years old and over. Educational attainment is related to a number of health status measures (see, for example, Chapter IX, Mental Health and Chapter III, Prevention).

In 1987, nearly one-quarter (24.4 percent) of all Americans over 25 had not completed high school. Racial and ethnic differences were striking: 23 percent of Whites had not graduated from high school vs. 36.6 percent of Blacks and 49.1 percent of Hispanics. While White Americans were slightly more likely to have completed high school than Black Americans (39.2 percent vs. 37.1 percent), only 29.0 percent of Hispanics had completed high school. White Americans were twice as likely to have graduated from college as Blacks in 1987, and more than twice as likely as Hispanics to have done so (20.5 percent, 10.7 percent and 8.6 percent, respectively). While the data indicate some improvement since 1980, the racial and ethnic differences have not changed substantially. In 1980, 17.2 percent of Whites, 8.4 percent of Blacks, and 7.7 percent of Hispanics had

completed four or more years of college. (10)

In addition to the relationship between health status and educational attainment, a strong relationship exists between education and income level. For example, in 1988, the median income of married-couple families in which neither husband nor wife had completed high school was \$17,386, compared with \$40,046 for those who had 13 to 15 years of education. For those families in which both husband and wife had completed college or beyond, the median income was \$57,068. (11)

Table 5 shows the labor force status of civilians 16 years and over in the year 1987. The unemployment rate showed significant differences by race and ethnicity: the lowest employment rate was for Whites, at 5.3 percent; followed by Hispanics at 8.8 percent, followed by Blacks at 13.0 percent. Blacks were more than twice as likely compared to Whites to be unemployed.

The next indicator in Table 5 shows data for population distribution by family type; an important statistic in this respect is the proportion of families with a female head of household (i.e., with no spouse present) and with children under 18 years of age. For Whites this was 7.4 percent, for Hispanics 16.6 percent and for Blacks 28.5 percent. Thus, nearly one-third of all Black families in 1987 were headed by women with no spouse present and with children under age 18.

In 1986, 13.5 percent of the total population, or more than 32 million Americans, lived below the poverty level. Nearly one-third (31.1

percent) of Blacks lived below the poverty level, compared with 11 percent of Whites and 27.3 percent of Hispanics (Table 5). The median income of White Americans was \$30,809 in 1987, in comparison with \$19,995 for Hispanics, and \$17,604 for Blacks. These differences pertained notwithstanding educational level. For example, in 1988, the median income of White married-couple families in which both husband and wife had less than 12 years of education was \$17,887, vs. \$14,590 for comparable Black couples and \$16,511 for Hispanic couples. For those with 13 to 15 years of education, the median income was \$40,448, \$35,692, and \$35,964 for Whites, Blacks, and Hispanics. For those who had completed 16 or more years of education, the median income was \$57,674, \$51,641, and \$52,032 for Whites, Blacks, and Hispanics, respectively. (11)

Table 6 elaborates on income status, showing 1987 data for persons below the poverty level by race and Hispanic origin, age, and region. The total number of those living below the poverty level increased slightly between 1986 and 1987, and the racial and ethnic disparity worsened slightly. Thirty-three percent of Blacks lived below the poverty level, 28.2 percent of Hispanics and 10.5 percent of Whites. For all groups, the proportions below the poverty level are highest for children below age 16. This age-related pattern is similar for each of the three groups shown in Table 6.

When all races are considered, poverty is highest in the South, although this pattern varies significantly by race/ethnicity. For the nation as a whole, 3.1 times as

many Blacks live below the poverty line as do Whites, but this ratio reaches 3.7 for the Midwest, and falls to 2.1 in the West. Similarly, 2.7 times as many Hispanics nationally live below the poverty lines as do Whites, but this ratio reaches 4.1 in the Northeast, and falls to 2.0 in the West. Compared to the White majority, Blacks appear to live in relatively more poverty in the Midwest, and live in the least poverty in the West. Compared to the White majority, Hispanics live in relatively more poverty in the Northeast and live in the least poverty in the West.

Comparable socioeconomic data for American Indians are available only for 1980, and are shown in Table 7. (They, therefore, are not directly comparable with data shown in Table 5.) More than half of all American Indians 25 years of age and over had graduated from high school (55.4 percent), 11.1 percentage points less than the national proportion of high school graduates (66.5 percent). The disparity with regard to college graduation was even larger: 7.4 percent for American Indians and 16.2 percent for the U.S. overall. If it can be assumed that the rate of change in the proportion of high school graduates between 1980 and 1987 was roughly the same for Whites, Blacks, and Hispanics, then the proportion of high school graduates among American Indians, Eskimos, and Aleuts in 1987 was lower than for Whites, about the same as for Blacks, and higher than for Hispanics.

D. Marriages and Divorces

Neither marriage nor divorce rates is available by race or ethnicity for the country as a whole. Therefore, statistics on the current marital status of the population are used instead to show racial and ethnic differences. Table 8 shows the proportion of the population aged 18 and over who are married or divorced, by sex and by race from 1970 to 1987. The percent married has clearly declined steadily throughout the entire period, among both males and females and among both Whites and Blacks.

The percent of the population that is married is much lower among Blacks than Whites; this has been true throughout the period of 1970 to 1987. In 1987, 67.4 percent of the White male population was married, but only 50.9 percent of Black population was married, while among females the comparable percents were 62.5 percent for Whites and 45.0 percent for Blacks.

Table 8 also shows that the percent divorced in the population rose between 1970 and 1987. This has been true for both males and females and for Whites and Blacks. But the percentage of persons currently divorced was higher for Blacks than Whites, for both males and females (e.g., 8.5 percent for White females and 11.2 percent for Black females).

Table 9 shows the marital status of the Hispanic population from 1970 to 1987 for persons 14 and over. Here there was a rise from 1970 to 1980 in the percentage of the population that was married, but a decline from 1980 to 1987. Even so, the proportions married were much higher

than the comparable percentages for Blacks in 1987 (see Table 8), and are close to those for Whites. Among Hispanics the proportion that are married is higher for females than males, unlike the pattern for Whites and Blacks where the proportion married is higher for males. The Hispanic population has also experienced a marked increase in the percent divorced since 1970, similar to both the White and Black populations discussed earlier.

E. Birth Rates and Fertility

Records of births are kept primarily for legal purposes, but birth data are also used by social scientists, statisticians, and planners as a factor in measuring population growth and in planning services for various age groups of the population. However, many characteristics of the mother, father, and the newborn, of importance to their future health status, do not appear in birth records. Some of these are the dietary, rest, exercise, and alcohol and tobacco consumption practices of the mother, especially during gestation.

Fortunately, some of the factors surrounding birth, such as age, marital status, condition of the mother, condition of the live birth, and levels and types of care received at the time of birth, many of which have long-range health implications, are recorded on the birth records. Some of these factors are discussed in Chapter IV of this book, Reproductive Health, while this chapter limits itself to discussion of birth and fertility rates.

Table 10 shows birth rates and fertility rates by race

(White, all other races, and Black) for years from 1960 to 1987. Birth rates are calculated with the total population as the denominator. Birth rates declined consistently for each group from 1960 to about 1975 or 1976; after that, they remained relatively stable. Throughout the time period of 1960 to 1987, birth rates for the Black population were about 50 percent higher than the rates for the White population.

Fertility rates are calculated by using the population of women age 15 to 44 as the denominator since this is the age group most likely to give birth. The proportion of women 15 to 44 is higher among Blacks than Whites and thus, using only women in this age group as the denominator provides a more valid measure of fertility than the birth rate. From 1960 to 1987, fertility rates declined by approximately one-half for both Whites and Blacks. The Black and White disparity in fertility rates has declined in the past 37 years but is still substantial. In 1987, the fertility rate for Whites was 62.0 births per 1,000 women aged 15 to 44 compared to the fertility rate of 83.8 for Blacks.

Table 11 shows birth rates and fertility rates, in 1987, for 11 reporting States, by Hispanic origin of the mother, i.e., Mexican, Puerto Rican, Cuban, and other Hispanic (Central and South American, other, and unknown), and non-Hispanic. The overall Hispanic birth and fertility rates for 1987 were somewhat higher than those for Blacks (shown in Table 10) and substantially higher than for all non-Hispanics. Within the overall Hispanic category, fertility was lowest for Cubans, by a very wide margin, followed by Puerto Ricans and Mexicans. The

Table 1

Numbers and percentage of total U.S. resident population by race and Hispanic origin, by region:
1980 and 1986

Race and Hispanic origin	Total U.S.	Northeast	No. Central	South	West
Numbers * (000s), all ages					
All races	226,546	49,135	58,866	75,372	43,172
White	188,372	42,326	52,195	58,960	34,890
Black	26,495	4,848	5,337	14,048	2,262
American Indian ¹	1,420	79	248	372	721
Chinese	806	218	73	91	425
Filipino	775	75	80	83	537
Japanese	701	47	45	45	565
Asian Indian	362	121	85	84	72
Korean	355	68	62	70	154
Vietnamese	262	25	37	80	120
All other races	6,999	1,328	704	1,540	3,427
Hispanic origin ²	14,609	2,604	1,277	4,474	6,254
Percentage					
All races	100.00	100.00	100.00	100.00	100.00
White	83.15	86.14	88.67	78.23	80.82
Black	11.70	9.87	9.07	18.64	5.24
American Indian ¹	.63	.16	.42	.49	1.67
Chinese	.36	.44	.12	.12	.98
Filipino	.34	.15	.14	.11	1.24
Japanese	.31	.10	.08	.06	1.31
Asian Indian	.16	.25	.14	.11	.17
Korean	.16	.14	.11	.09	.36
Vietnamese	.12	.05	.06	.11	.28
All other races	3.09	2.70	1.20	2.04	7.94
Hispanic origin ²	6.45	5.30	2.17	5.94	14.49
Projected 1986 numbers * (000s), 18 years and older					
All races	182,628	38,402	43,952	63,032	37,242
White	156,578	33,735	39,346	51,355	32,143
Black	20,441	3,893	3,933	10,674	1,942
Other races	5,609	774	674	1,003	3,158
Hispanic ²	13,021	2,173	1,005	3,917	5,925
Projected 1986 percents (000s), 18 years and older					
All races	100.00	100.00	100.00	100.00	100.00
White	85.74	87.85	89.52	81.47	86.31
Black	11.19	10.14	8.95	16.93	5.21
Other races	3.07	2.02	1.53	1.59	8.48
Hispanic ²	7.13	5.66	2.29	6.21	15.91

* In thousands.

¹ Includes Eskimo and Aleut.

² Persons of Hispanic origin may be of any race.

Source: U.S. Bureau of the Census. 1980 Census of Population, Vol. 1, Ch B. For 1986, U.S. Bureau of the Census. Current Population Reports, Series P-25, No. 1019.

Table 2

Number and percent of U.S. resident population, by age and race: 1970, 1980, and 1986*

Year and race	Total all age groups	Under 5 years	5-24 years	25-44 years	45-64 years	65+ years	Median age
Numbers							
1970							
All races ¹	203,235	17,163	76,240	48,024	41,837	19,973	28.0
White	178,098	14,464	65,404	42,232	37,726	18,272	28.9
Black	22,581	2,434	9,802	5,078	3,722	1,544	22.4
1980							
All races ¹	226,546	16,348	77,429	62,716	44,503	25,550	30.0
White	194,713	13,414	64,565	54,047	39,525	23,162	30.9
Black	26,683	2,459	10,956	6,975	4,200	2,092	24.9
1986							
All races ¹	241,078	18,128	72,882	75,853	45,044	29,172	31.8
White	204,301	14,675	59,469	64,516	39,344	26,298	32.7
Black	29,306	2,721	10,862	8,785	4,545	2,395	26.9
Percents							
1970							
All races ¹	100.0	8.4	37.5	23.6	20.6	9.8	
White	100.0	8.1	36.7	23.7	21.2	10.3	
Black	100.0	10.8	43.4	22.5	16.5	6.8	
1980							
All races ¹	100.0	7.2	34.2	27.7	19.6	11.3	
White	100.0	6.9	33.2	27.8	20.3	11.9	
Black	100.0	9.2	41.1	26.1	15.7	7.8	
1986							
All races ¹	100.0	7.5	30.2	31.5	18.7	12.1	
White	100.0	7.2	29.1	31.6	19.3	12.9	
Black	100.0	9.3	37.1	30.0	15.5	8.2	

Table 2

Number and percent of U.S. resident population, by age and race: 1970, 1980, and 1986*—Continued

Year and race	Total all age groups	Under 5 years	5-24 years	25-44 years	45-64 years	65+ years
Percents						
1970						
All races ¹	100.0	100.0	100.0	100.0	100.0	100.0
White	87.6	84.3	85.8	87.9	90.2	91.5
Black	11.1	14.2	12.9	10.6	8.9	7.7
1980						
All races ¹	100.0	100.0	100.0	100.0	100.0	100.0
White	85.9	82.1	83.4	86.2	88.8	90.7
Black	11.8	15.0	14.1	11.1	9.4	8.2
1986						
All races ¹	100.0	100.0	100.0	100.0	100.0	100.0
White	84.7	81.0	81.6	85.1	87.3	90.1
Black	12.2	15.0	14.9	11.6	10.1	8.2

* In thousands.

¹ Includes other races, not shown separately.

Note: 1970 and 1980 data based on enumerated population as of April 1. 1986 data based on estimated population as of July 1. Excludes Armed Forces overseas.

Source: U.S. Bureau of the Census. Statistical Abstract of the United States: 1987, (107th edition.), Washington, D.C., Table 20, p. 17.

low rates for Cubans reflect their relatively high socioeconomic status. The higher rates for Mexicans compared to Puerto Ricans probably reflect rural origins and rural current residence of Mexican Americans compared to the largely urban current residence of Puerto Ricans.

American Indians and Alaska Natives in Reservation States have higher birth rate than any group, as shown in Table 12. This rate in 1985, the most recent year for which data are available, was 28.0 births per 1,000, compared with 14.8 per 1,000 for Whites and 21.1 for Blacks in the same year. Within the overall category of American Indians and Alaska Natives, Alaska Natives have even higher rates than American Indians: 36.6 births per 1,000 population in 1985.

The intrinsic rate of natural increase of the population is the rate that would eventually prevail if a population were to experience the birth and death rates occurring in the specified year, and if those rates remained unchanged over a long period of time. Although the death rates are higher for Blacks, throughout their lifetime, the higher Black fertility rates combine to produce an intrinsic rate of increase for Blacks (and others) that is substantially higher than the White intrinsic rate. In 1972, the White intrinsic rate of natural increase began to show a net intrinsic decrease, although the net decrease became somewhat more pronounced between 1979 and 1987 (-7.7 to -6.8 , respectively). The intrinsic rate of natural increase for minorities decreased steadily from 1970 to 1984, but in 1987 returned to the 1981 rate. (12)

F. Mortality

The transition from wellness to ill health is often gradual and poorly defined. Because death, in contrast, is a clearly defined event, it has continued to be the most reliable single indicator of the health status of a population. Mortality statistics, however, describe only a part of the health status of a population, and often only the end point of an illness process. Since death may occur in the absence of lengthy morbidity, and many disabilities of long duration do not result in death, morbidity and disability measures are also used to supplement mortality data in describing the well-being of a population.

Because mortality rates increase so sharply with increasing age, comparisons among populations over time must adjust for differing age distributions among the comparison groups. One such method, the direct method of age adjustment, weights the age-specific mortality rates of populations to be compared in accordance with the weights in the age distribution of a "standard population". This procedure has been followed for all-age death rates presented in this section, using the 1940 population of the United States as the standard population.

Table 13 shows age-adjusted death rates by race and sex for United States for the years 1940 to 1987. Between 1940 and 1987, the United States age-adjusted mortality rate from all causes decreased by one-half, from 1,076.1 deaths per 100,000 population to 535.5 per 100,000. The dramatic decreases in mortality rates were evident for Whites as well as minorities and Blacks. However, the age-adjusted death rate for minorities, and Blacks in particular, is still

significantly higher than that of Whites: 511.1 deaths per 100,000 for Whites, 688.0 per 100,000 for all others, and 778.6 per 100,000 for Blacks.

Table 14 compares the current (1987) age-adjusted mortality rates by race (Whites and Blacks) for the 15 leading causes of death. Black rates are 52 percent higher than Whites for all causes of death. Blacks die from homicide and legal intervention at a rate six times that of Whites. For four other causes, Black rates were more than twice those of Whites: nephritis and allied conditions (176 percent higher), septicemia (172 percent higher), perinatal conditions (162 percent higher), and diabetes mellitus (132 percent higher). Black rates were lower for suicide (46 percent lower), chronic obstructive pulmonary diseases (19 percent lower), and motor-vehicle accidents (10 percent lower).

Table 15 shows similar data for age-adjusted mortality rates comparing American Indians and Alaska Natives to all races in the United States, to Whites, and to all others (mainly Black but also including a substantial number of Asians). In 1986, the American Indian age-adjusted death rate for all causes was higher than the rate for the total population and for Whites: 551.4 deaths per 100,000 population for Indians, 541.7 per 100,000 for all races, and 518.0 per 100,000 for Whites. It was substantially lower than the comparable rate for all others (693.1 per 100,000).

Comparing Indian rates to those of all races, Indian rates are much lower for major cardiovascular disease, malignant neoplasms

(cancer), and chronic obstructive pulmonary diseases (Table 15). In contrast, Indian rates for tuberculosis are more than four times those of the U.S. overall. Chronic liver disease and cirrhosis rates for American Indians are almost three times U.S. rates overall. Rates for diabetes mellitus were twice as high and for homicide and accidents 1.8 times as high for Indians and Alaska Natives compared to the U.S. population in general.

Notably, American Indian death rates are substantially higher than for all other races for those causes of death where alcohol is believed to play a substantial role, i.e., chronic liver disease and cirrhosis, accidents (both motor-vehicle and all other), and suicide. (See Chapter IX, Mental Health for a discussion of alcoholism.)

Table 16 shows death rates by age and race for the United States in 1986. Black rates are much higher during infancy than White rates, but the difference narrows during the childhood and teen years, and the excess of Black mortality rates is only 4 percent at ages 15 to 19. The difference increases again to a peak of 160 percent at ages 35 to 39, only to decline steadily thereafter to 16 percent at 80 to 84 years and to a negative difference, wherein Black death rates are 14 percent lower than White, at age 85 and over.

At ages 20 to 24 and older, the difficult social conditions of many young Black adults, particularly males, take a relatively high toll in lives, especially from homicide. The Black and White ratio for all causes of death increases to 2.60 at ages 35 to 39. But again, the effect of these social conditions diminishes

with increasing age as the more robust individuals and those least affected by the poor social conditions survive, so that the two races approach equity at ages 75 to 84. Among persons surviving to 85 and older, the mortality rates of Blacks are lower. This phenomenon has been called the "racial mortality crossover," and it has been widely discussed among researchers. One very useful discussion is found in Markides. (13)

A somewhat similar pattern is followed by American Indians and Alaska Natives in relation to Whites, as Table 17 shows for 1984-1986 data. The infant death rates of American Indians and Alaska Natives are higher than for Whites, but not nearly by as wide a margin compared to Blacks shown in Table 16. The Indian death rate exceeds the White death rate by 23 percent during infancy, but this excess increases to 99 percent at ages 1 to 4. The excess decreases again to 26 percent at ages 5 to 14, but then rises to a peak of 121 percent at 25 to 34. In the older years, the ratio declines again.

G. Life Expectancy

The life expectancy rate is a standard measure used to compare the health status of various populations. According to Abramson, "The value of life expectancy statistics is that they provide a way of controlling for the confounding effects of age when comparing populations." (14)

Table 18 shows life expectancy at birth by race (White and Black) and sex in the United States for years from 1940 to 1987. Following the pattern of age-adjusted mortality rates shown in Table 16, White life expectancy exceeded the comparable figure for Black life expectancy, by 7.6 years in 1970 and by 6.2 in 1987. In 1987, the discrepancy was largest for males; the life expectancy for White males was 72.2 vs. 65.2 for Black males, a difference of 7 years. From 1984 to 1986, life expectancy declined for Blacks, while White life expectancy remained unchanged from 1984 to 1985 and rose in 1986 and again in 1987 (see Table 18).

Among both Blacks and Whites the life expectancy of females exceeded that for

males throughout the entire time period of 1940 to 1987, but the discrepancy between the sexes was greater for Blacks than for Whites. In 1987, female life expectancy exceeded male life expectancy by 8.4 years among Blacks, but only by 6.7 years among Whites.

American Indians and Alaska Natives also have shorter life expectancies than the U.S. White population, although the differences have narrowed sharply between 1940 and 1980 (see Table 19). Thus, while Whites gained 10.2 years during that period, Indians gained 20.1 years. White life expectancy exceeded Indian life expectancy by 13.2 years in 1940, but by 1980 the difference was reduced to 3.3 years. In both 1970 and 1980, Indian life expectancy was higher than Black life expectancy as shown in Table 18. Indian life expectancy exceeded Black life expectancy by 1.0 year in 1970 but had risen to 3.0 years in 1980.

Table 3

Hispanic population, by age and sex: 1980 and 1987 *

Year and sex	Total all years	Under 5 years	5-24 years	25-44 years	45-64 years	65+ years	Median age
Numbers (000s)							
1980							
Total	14,609	1,663	6,204	4,071	1,961	709	23.2
Male	7,280	848	3,176	2,016	934	305	22.6
Female	7,329	815	3,029	2,054	1,026	404	23.8
1987							
Total	18,790	1,995	7,348	6,050	2,495	906	25.1
Male	9,414	1,010	3,791	3,061	1,166	388	24.6
Female	9,376	985	3,555	2,990	1,330	518	25.8
Percents							
1980							
Total	100.0	11.4	42.5	27.9	13.4	4.9	
Male	100.0	11.6	43.6	27.7	12.8	4.2	
Female	100.0	11.1	41.3	28.0	14.0	5.5	
1987							
Total	100.0	10.6	39.1	32.2	13.3	4.8	
Male	100.0	10.7	40.3	32.5	12.4	4.1	
Female	100.0	10.5	37.9	31.9	14.2	5.5	

* In thousands.

Note: 1980, as of April; 1987 as of March. Hispanic persons may be of any race.

Source: U.S. Bureau of the Census. Statistical Abstract of the United States, 1989 (109th edition.), Washington, D.C., Table 20, p. 16.

Table 4

Number and percent distribution by age of the American Indian and Alaska Native population in reservation States, and U.S. population, all races, 1980

Year and race	Total all years	Under 5 years	5-24 years	25-44 years	45-64 years	65+ years	Median age
Numbers (000s)							
U.S. (all races)	226,505	16,344	77,412	62,707	44,497	22,544	30.0
American Indian & Alaska Native	1,295	140	573	346	169	68	22.6
Percents ¹							
U.S. (all races)	100.0	7.2	34.2	27.7	19.6	11.3	
American Indian & Alaska Native	100.0	10.8	44.2	26.7	13.1	5.3	

¹ Percentages may not add up to 100 because of rounding.

Source: Department of Health and Human Services. Indian Health Service, Chart Series Book, Apr. 1988, Table 2.4, p. 15.

Table 5

Social and economic characteristics of the White, Black, and Hispanic populations: United States, 1987

Characteristic	Number (1,000)				Percent distribution			
	Total population ¹	White	Black	Hispanic ²	Total population ¹	White	Black	Hispanic ²
Total persons	238,789	202,453	28,930	18,790	100.0	100.0	100.0	100.0
YEARS OF SCHOOL COMPLETED								
Persons 25 years old and over	149,144	129,170	15,580	9,449	100.0	100.0	100.0	100.0
Elementary: 0-8 years	18,941	15,478	2,863	3,330	12.7	12.0	18.4	35.2
High school: 1-3 years	17,417	14,233	2,835	1,310	11.7	11.0	18.2	13.9
4 years	57,669	50,690	5,773	2,742	38.7	39.2	37.1	29.0
College: 1-3 years	25,479	22,265	2,442	1,257	17.1	17.2	15.7	13.3
4 years or more	29,637	26,505	1,667	810	19.9	20.5	10.7	8.6
LABOR FORCE STATUS								
Civilians 16 years old and over	182,753	156,958	20,352	12,867	100.0	100.0	100.0	100.0
Civilian labor force	119,865	103,290	12,993	8,541	65.6	65.8	63.8	66.4
Employed	112,440	97,789	11,309	7,790	61.5	62.3	55.6	60.5
Unemployed	7,425	5,501	1,684	751	4.1	3.5	8.3	5.8
Unemployment rate ³	6.2	5.3	13.0	8.8	(x)	(x)	(x)	(x)
Not in labor force	62,888	53,669	7,359	4,327	34.4	34.2	36.2	33.6
FAMILY TYPE								
Total families	64,491	55,676	7,096	4,403	100.0	100.0	100.0	100.0
With own children ⁴	31,898	26,717	4,184	2,859	49.5	48.0	59.0	64.9
Married couple	51,537	46,410	3,742	3,118	79.9	83.4	52.7	70.8
With own children ⁴	24,645	21,787	2,023	2,034	38.2	39.1	28.5	46.2
Female householder, no spouse present	10,445	7,227	2,967	1,032	16.2	13.0	41.8	23.4
With own children ⁴	6,297	4,141	2,025	729	9.8	7.4	28.5	16.6
Male householder, no spouse present	2,510	2,038	386	253	3.9	3.7	5.4	5.7
With own children ⁴	955	789	136	96	1.5	1.4	1.9	2.2
FAMILY INCOME, 1986								
Total families	64,491	55,676	7,096	4,403	100.0	100.0	100.0	100.0
Less than \$5,000	3,008	1,947	994	381	4.7	3.5	14.0	8.7
\$5,000-\$9,999	5,022	3,747	1,146	643	7.8	6.7	16.1	14.6
\$10,000-\$14,999	6,232	5,047	977	668	9.7	9.1	13.8	15.2
\$15,000-\$24,999	12,613	10,875	1,435	985	19.6	19.5	20.2	22.4
\$25,000-\$34,999	11,654	10,332	1,043	727	18.1	18.6	14.7	16.5
\$35,000-\$49,999	12,632	11,461	878	550	19.6	20.6	12.4	12.5
\$50,000 or more	13,328	12,267	624	450	20.7	22.0	8.8	10.2
Median income (dol.)	29,458	30,809	17,604	19,995	(x)	(x)	(x)	(x)
Persons below poverty level	32,370	22,183	8,983	5,117	13.6	11.0	31.1	27.3
HOUSING TENURE								
Total occupied units	89,479	77,284	9,922	5,418	100.0	100.0	100.0	100.0
Owner-occupied	57,258	51,657	4,505	2,198	64.0	66.8	45.4	40.6
Renter-occupied	30,687	24,289	5,245	3,098	34.3	31.4	52.9	57.2
No cash rent	1,534	1,338	172	123	1.7	1.7	1.7	2.3

* Not applicable.

¹ Includes other races and persons not of Hispanic origin, not shown separately.² Hispanic persons may be of any race.³ Total unemployment as percent of civilian labor force.⁴ Children under 18 years old.

Note: As of March, except labor force status, annual average. Excludes members of Armed Forces except those living off post or with their families on post. Based on Current Population Survey.

Source: Abstracted from U.S. Bureau of the Census, Statistical Abstract of the United States, 1989, (109th edition.), Washington, D.C. Table 44, p. 38.

Table 6

Persons below poverty level, by race, Hispanic origin, age, and region: 1987

Age and region	Number below poverty level (1,000)				Percent below poverty level			
	All races ¹	White	Black	Hispanic ²	All races ¹	White	Black	Hispanic ²
Total	32,546	21,409	9,683	5,470	13.5	10.5	33.1	28.2
Under 16 years old	11,859	7,289	4,007	2,493	21.2	16.2	46.7	40.6
16-21 years old	3,455	2,148	1,144	565	15.9	12.1	36.0	27.5
22-44 years old	9,596	6,470	2,647	1,628	10.7	8.5	25.1	21.2
45-64 years old	4,145	2,905	1,077	536	9.1	7.4	23.5	20.4
65 years old and over	3,491	2,597	808	247	12.2	10.1	33.9	27.4
Northeast	5,476	3,860	1,391	1,232	11.0	8.9	28.8	36.6
Midwest	7,499	5,185	2,041	366	12.7	9.9	36.6	27.5
South	13,287	7,426	5,648	1,910	16.1	11.5	34.5	31.0
West	6,285	4,939	603	1,962	12.6	11.5	24.3	23.0

¹ Includes other races not shown separately.² Hispanic persons may be of any race.

Note: Persons as of March 1988. Based on Current Population Survey.

Source: U.S. Bureau of the Census. Statistical Abstract of the United States, 1989 (109th edition.), Washington, D.C. Table 736, p. 454.

Table 7

Social and economic characteristics of American Indians in 33 reservation States, 1980

	American Indians, Eskimos & Aleuts	U.S. All Races
Median Age	22.6	30.0
Percent Female	50.7%	51.4%
Percent Male	49.3%	48.6%
Average Number of Persons per Family	4.6	3.8
Median Family Income	\$13,700	\$19,900
Average Family Income	\$16,500	\$23,100
Per Capita Income	\$3,600	\$7,300
Percent of All Persons, Below Poverty Level	28.2%	12.4%
Percent High School Graduates	55.4%	66.5%
Percent College Graduates	7.4%	16.2%
Percent in Labor Force, 16 years old and over	57.8%	62.0%
Female, 16 years old and over	47.7%	49.9%
Male, 16 years old and over	68.6%	75.1%
Percent of Civilian Labor Force Unemployed	13.3%	6.5%
Female, 16 years old and over	11.9%	6.5%
Male, 16 years old and over	14.5%	6.5%

Note: There were 28 reservation States in 1980, 31 in 1983, 32 in 1984 and 33 in 1988.

Source: Department of Health and Human Services. Indian Health Service, "Trends in Indian Health, 1989," Table 2.5, p. 19.

Table 8

Percent married and divorced of the population, by sex and race: United States, 1970 to 1987

Sex and race	1970	1975	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Percent married:												
Male ¹	75.3	72.8	70.1	69.2	68.4	67.8	67.2	66.6	65.8	65.7	65.5	65.5
White	76.1	73.9	71.7	70.7	70.0	69.6	69.0	68.3	67.7	67.6	67.2	67.4
Black	66.9	62.7	57.6	55.7	54.6	53.5	53.1	52.2	50.6	50.7	51.7	50.9
Female ¹	68.5	66.7	64.2	63.5	63.0	62.4	61.9	61.4	60.8	60.4	60.5	60.5
White	69.3	68.0	65.9	65.2	64.7	64.1	63.7	63.3	62.8	62.7	62.4	62.5
Black	61.7	55.5	50.3	49.0	48.7	48.1	47.3	45.7	44.5	42.7	44.5	45.0
Percent divorced:												
Male ¹	2.5	3.7	4.7	4.8	5.2	5.7	5.9	5.8	6.1	6.5	6.6	6.7
White	2.4	3.6	4.5	4.5	5.0	5.5	5.7	5.7	6.0	6.4	6.6	6.6
Black	3.6	5.1	6.9	7.2	7.0	8.1	8.1	7.4	7.0	7.6	7.4	8.2
Female ¹	3.9	5.3	6.6	6.6	7.1	7.6	8.0	7.9	8.3	8.7	8.9	8.7
White	3.8	5.0	6.3	6.4	6.8	7.2	7.8	7.6	8.0	8.5	8.6	8.5
Black	5.0	7.5	9.3	8.9	9.5	10.3	9.6	10.5	11.0	11.0	11.6	11.2

¹ Includes other races, not shown separately.

Note: As of March 1989. Persons 18 years old and over. Excludes members of Armed Forces except those living off post or with their families on post.

Source: U.S. Bureau of the Census, Statistical Abstract of the United States, 1989 (109th edition.), Washington, DC., Table 51, p. 42.

Table 9

Percentage of the Hispanic population that is single, married, widowed, and divorced, by sex: United States, 1970, 1980, 1985, and 1987

Marital status	Total				Male				Female			
	1970	1980	1985	1987	1970	1980	1985	1987	1970	1980	1985	1987
Percent of total:												
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Single	29.3	24.1	25.5	26.1	32.2	27.3	30.8	31.2	26.5	21.1	20.4	21.1
Married	62.4	65.6	62.7	62.0	63.5	67.1	61.5	60.7	61.5	64.3	63.8	63.2
Widowed	4.9	4.4	5.1	4.3	2.0	1.6	2.3	1.8	7.6	7.1	7.8	6.7
Divorced	3.4	5.8	6.7	7.7	2.3	4.0	5.4	6.3	4.4	7.6	8.0	9.0

¹ Hispanic persons may be of any race. 1970 data as of April.

Note: As of March 1989, except as noted. Hispanic population: 1970, persons 14 years old and over, thereafter, 18 years old and over. Except as noted, based on Current Population Survey.

Source: U.S. Bureau of the Census, Statistical Abstract of the United States: 1989 (109th edition.), Washington, D.C., Table 54, p. 43.

Table 10

Live births, birth rates, and fertility rates, by race of child: United States, 1960-87

Year	Number				Birth rate				Fertility rate			
	All races	White	All Other		All races	White	All Other		All races	White	All other	
			Total	Black			Total	Black			Total	Black
Registered births												
1987	3,809,394	2,992,488	816,906	641,567	15.7	14.5	21.7	21.6	65.7	62.0	84.4	83.8
1986	3,756,547	2,970,439	786,108	621,221	15.6	14.5	21.4	21.2	65.4	61.9	83.0	82.4
1985	3,760,561	2,991,373	769,188	608,193	15.8	14.8	21.4	21.1	66.2	63.0	83.2	82.2
1984 ¹	3,669,141	2,923,502	745,639	592,745	15.5	14.5	21.2	20.8	65.4	62.2	82.5	81.4
1983 ¹	3,638,933	2,904,250	734,683	586,027	15.5	14.6	21.3	20.9	65.8	62.4	83.2	81.7
1982 ¹	3,680,537	2,942,054	738,483	592,641	15.9	14.9	21.9	21.4	67.3	63.9	85.5	84.1
1981 ¹	3,629,238	2,908,669	720,569	587,797	15.8	14.8	22.0	21.6	67.4	63.9	86.4	85.4
1980 ¹	3,612,258	2,898,732	713,526	589,616	15.9	14.9	22.5	22.1	68.4	64.7	88.6	88.1
1979 ¹	3,494,398	2,808,420	685,978	577,855	15.6	14.5	22.2	22.0	67.2	63.4	88.5	88.3
1978 ¹	3,333,279	2,681,116	652,163	551,540	15.0	14.0	21.6	21.3	65.5	61.7	87.0	86.7
1977 ¹	3,326,632	2,691,070	635,562	544,221	15.1	14.1	21.6	21.4	66.8	63.2	87.7	88.1
1976 ¹	3,167,788	2,567,614	600,174	514,479	14.6	13.6	20.8	20.5	65.0	61.5	85.8	85.8
1975	3,144,198	2,551,996	592,202	511,581	14.6	13.6	21.0	20.7	66.0	62.5	87.7	87.9
1974 ¹	3,159,958	2,575,792	584,166	507,162	14.8	13.9	21.2	20.8	67.8	64.2	89.8	89.7
1973 ¹	3,136,965	2,551,030	585,935	512,597	14.8	13.8	21.7	21.4	68.8	64.9	93.4	93.6
1972 ¹	3,258,411	2,655,558	602,853	531,329	15.6	14.5	22.8	22.5	73.1	68.9	99.5	99.9
1971 ²	3,555,970	2,919,746	636,224	564,960	17.2	16.1	24.6	24.4	81.6	77.3	109.1	109.7
1970 ²	3,731,386	3,091,264	640,122	572,362	18.4	17.4	25.1	25.3	87.9	84.1	113.0	115.4
1969 ²	3,600,206	2,993,614	606,592	543,132	17.9	16.9	24.5	24.4	86.1	82.2	111.6	112.1
1968 ²	3,501,564	2,912,224	589,340	531,152	17.6	16.6	24.2	24.2	85.2	81.3	111.9	112.7
1967 ³	3,520,959	2,922,502	598,457	543,976	17.8	16.8	25.0	25.1	87.2	82.8	117.1	118.5
1966 ²	3,606,274	2,993,230	613,044	558,244	18.4	17.4	26.1	26.2	90.8	86.2	123.5	124.7
1965 ²	3,760,358	3,123,860	636,498	581,126	19.4	18.3	27.6	27.7	96.3	91.3	131.9	133.2
1964 ²	4,027,490	3,369,160	658,330	607,556	21.1	20.0	29.2	29.5	104.7	99.8	140.0	142.6
1963 ^{2 4}	4,098,020	3,326,344	638,928	580,658	21.7	20.7	29.7		108.3	103.6	143.7	
1962 ^{2 4}	4,167,362	3,394,068	641,580	584,610	22.4	21.4	30.5		112.0	107.5	147.8	
1961 ²	4,268,326	3,600,864	667,462	611,072	23.3	22.2	31.6		117.1	112.3	153.0	
1960 ²	4,257,850	3,600,744	657,106	602,264	23.7	22.7	32.1	31.9	118.0	113.2	153.6	153.5

¹ Based on 100 percent of births in selected States and on a 50-percent sample of births in all other States.² Based on a 50-percent sample of births.³ Based on a 20- to 50-percent sample of births.⁴ Figures by race exclude data for New Jersey.

Note: Birth rates are live births per 1,000 population in specified group. Fertility rates per 1,000 women aged 15-44 years in specified group. Population enumerated as of April 1 for census years and estimated as of July 1 for all other years. Beginning with 1970, excludes births to nonresidents of the United States.

Source: National Center for Health Statistics, Monthly Vital Statistics Report, Advance Report of Final Natality Statistics, 1987, Volume 38, No. 3, Supplement, June 29, 1989, Table 1, p. 15.

Table 11

Birth and fertility rates, by Hispanic origin of mother: total of 11 reporting States, 1987

Measure	Origin of mother		Total				
	All origins	Hispanic	Mexican	Puerto Rican	Cuban	Other Hispanic ¹	Non-Hispanic ²
Birth rate ³	16.6	23.3	22.5	19.8	10.3	32.1	15.5
Fertility rate ⁴	68.5	93.0	94.5	67.7	51.1	112.3	64.1

¹ Includes Central and South American and other unknown Hispanic origin.² Includes origin not stated.³ Rate per 1,000 total population.⁴ Rate per 1,000 women aged 15-44 years.

Note: The 11 States are Arizona, California, Colorado, Florida, Illinois, Indiana, New Jersey, New Mexico, New York, Ohio, and Texas.

Source: National Center for Health Statistics, Monthly Vital Statistics Report, Advance Report of Final Natality Statistics, 1987, Volume 38, No. 3, Supplement, June 29, 1989, Table 25, p. 39.

Table 12

Number and rate* of live births, American Indians and Alaskan Natives and U.S. all races, 1955–1986

Calendar year	Indian & Alaskan Native		Indian		Alaskan Native		U.S. All Races		U.S. Other than White
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Rate
1986	41,020	38.312	2,708						
1985	41,155	28.0	38,395	27.5	2,760	36.6	3,756,547	15.6	21.4
1984	39,679	28.4	37,050	27.9	2,629	37.6	3,669,141	15.5	21.2
1983	39,521	28.8	36,839	28.4	2,682	37.2	3,638,933	15.5	21.3
1982	38,560	28.5	36,099	28.1	2,461	36.3	3,680,537	15.9	21.9
1981	34,205	28.0	31,975	27.7	2,230	34.9	3,629,238	15.8	22.0
1980	33,937	27.0	31,742	26.7	2,195	33.7	3,612,258	15.9	22.5
1979	31,843	27.2	29,803	26.8	2,040	33.0	3,494,398	15.6	22.2
1978	29,857	27.0	27,922	26.7	1,935	32.0	3,333,279	15.0	21.6
1977	28,198	27.1	26,325	26.8	1,873	31.1	3,326,632	15.1	21.6
1976	26,748	26.9	24,989	26.7	1,759	30.8	3,167,788	14.6	20.8
1975	25,457	26.9	23,695	26.7	1,762	30.2	3,144,198	14.6	21.0
1974	24,301	27.3	22,653	27.0	1,648	30.4	3,159,958	14.8	21.2
1973	23,757	28.1	22,087	28.0	1,670	30.1	3,136,965	14.8	21.7
1972	23,752	29.7	22,154	29.6	1,598	31.2	3,258,411	15.6	22.8
1971	23,806	31.2	22,092	31.1	1,714	31.8	3,555,970	17.2	24.6
1970	22,746	32.0	21,100	32.0	1,646	32.0	3,731,386	18.4	25.1
1969	21,593	32.3	20,074	32.3	1,519	31.4	3,600,206	17.9	24.5
1968	21,602	32.2	20,066	32.2	1,536	32.3	3,501,564	17.6	24.5
1967	20,658	33.0	18,948	32.8	1,710	35.8	3,520,959	17.8	25.0
1966	21,100	34.5	19,154	34.1	1,946	39.7	3,606,274	18.4	26.1
1965	22,370	36.4	20,352	36.0	2,018	42.3	3,760,358	19.4	27.6
1964	22,782	38.4	20,794	37.9	1,988	44.4	4,027,490	21.1	29.2
1963	22,274	39.5	20,142	38.9	2,132	45.7	4,098,020	21.7	29.7
1962	21,866	40.8	19,770	40.2	2,096	47.2	4,167,362	22.4	30.5
1961	21,664	41.7	19,570	41.2	2,094	46.8	4,268,326	23.3	31.6
1960	21,154	42.1	19,188	41.7	1,966	46.4	4,257,850	23.7	32.1
1959	20,520	41.4	18,616	40.9	1,904	46.7	4,244,796	24.0	32.9
1958	19,371	40.3	17,428	39.7	1,943	47.4	4,203,812	24.3	33.0
1957	18,814	39.1	16,982	38.2	1,832	49.3	4,254,784	25.0	33.9
1956	17,947	38.2	16,040	37.2	1,907	49.5	4,168,090	24.9	33.9
1955	17,028	37.5	15,304	36.5	1,724	49.5	4,047,295	24.6	33.1
1954	16,691		15,042	1,649					

* Rates per 1,000 population.

Note: Indian and Alaska Native rates are 3-year rates centered in the year specified. All other rates are for the year specified.

Source: Department of Health and Human Services, Indian Health Service, "Trends in Indian Health, 1989," Table 3.1, p. 20.

Table 13

Age-adjusted death rates*, by race and sex: United States, 1940, 1950, 1960, 1970, and 1975-87

Year	All races			White		
	Both sexes	Male	Female	Both sexes	Male	Female
1987	535.5	698.6	403.3	511.1	668.2	384.1
1986	541.7	709.1	406.6	518.0	679.8	387.7
1985	546.1	716.8	409.4	523.1	688.7	390.6
1984	545.9	716.7	409.6	523.6	689.9	391.3
1983	550.5	725.3	411.5	528.0	698.4	392.7
1982	553.8	733.1	411.2	531.8	706.0	393.3
1981	568.2	753.3	420.4	544.6	724.4	401.4
1980	585.8	777.2	432.6	559.4	745.3	411.1
1979	577.0	768.6	423.1	551.9	738.4	402.5
1978	595.0	791.4	437.4	569.5	761.1	416.4
1977	602.1	801.3	441.8	575.7	770.6	419.6
1976	618.5	820.9	455.0	591.3	789.3	432.5
1975	630.4	837.2	462.5	602.2	804.3	439.0
1970	714.3	931.6	532.5	679.6	893.4	501.7
1960	760.9	949.3	590.6	727.0	917.7	555.0
1950	841.5	1,001.6	688.4	800.4	963.1	645.0
1940	1,076.1	1,213.0	938.9	1,017.2	1,155.1	879.0

* Computed by direct method; e.g., by applying the age-specific death rates for a given cause of death to the standard population distribution by age.

Note: Rates per 100,000 population in specified group. Rates are based on populations enumerated as of April 1 for census years and estimated as of July 1 for all other years. Beginning 1970 excludes deaths of nonresidents of the United States.

Source: National Center for Health Statistics. Advance Report of Final Mortality Statistics, 1987. Monthly Vital Statistics Report, Vol. 38, No. 5, Supplement, Sept. 26, 1989, Table 1, p. 12.

Table 13

Age-adjusted death rates*, by race and sex: United States, 1940, 1950, 1960, 1970, and 1975–87—Continued

All other					
Total			Black		
Both sexes	Male	Female	Both sexes	Male	Female
688.0	898.1	520.1	778.6	1,023.2	586.2
693.1	905.7	524.0	781.0	1,026.9	588.2
697.8	910.4	530.0	779.9	1,024.0	589.1
694.5	904.4	529.0	771.9	1,011.7	585.3
703.1	916.3	535.2	777.9	1,019.6	590.4
704.6	928.4	529.3	778.7	1,035.0	581.4
732.6	964.3	549.3	803.9	1,067.7	599.1
774.2	1,015.1	582.6	842.5	1,112.8	631.1
757.1	994.8	566.9	812.1	1,073.3	605.0
780.0	1,021.0	585.8	831.8	1,093.9	622.7
796.7	1,036.1	601.8	849.3	1,112.1	639.6
818.5	1,063.4	618.3	870.5	1,138.3	654.5
840.6	1,090.1	634.5	890.8	1,163.0	670.6
983.4	1,231.4	770.8	1,044.0	1,318.6	814.4
1,046.1	1,211.0	893.3	1,073.3	1,246.1	916.9
1,225.7	1,358.5	1,095.7			
1,634.7	1,764.4	1,504.7			

* Computed by direct method; e.g., by applying the age-specific death rates for a given cause of death to the standard population distribution by age.

Note: Rates per 100,000 population in specified group. Rates are based on populations enumerated as of April 1 for census years and estimated as of July 1 for all other years. Beginning 1970 excludes deaths of nonresidents of the United States.

Source: National Center for Health Statistics. Advance Report of Final Mortality Statistics, 1987. Monthly Vital Statistics Report, Vol. 38, No. 5, Supplement, Sept. 26, 1989, Table 1, p. 12.

Table 14

Age-adjusted death rates for the 15 leading causes of death by race: United States, 1987

Rank ¹	Cause of death (Ninth Revision, International Classification of Diseases, 1975)	All races	White	Black	Ratio of Black to White
	All causes	535.5	511.1	778.6	1.52
1	Diseases of heart	169.6	165.0	226.9	1.38
2	Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues	132.9	130.1	172.2	1.32
3	Cerebrovascular diseases	30.3	28.1	51.2	1.82
4	Accidents and adverse effects	34.6	33.4	42.2	1.24
	Motor vehicle accidents	19.5	19.8	17.9	0.90
	All other accidents and adverse effects	15.2	14.0	24.2	1.73
5	Chronic obstructive pulmonary diseases and allied conditions	18.7	19.2	15.5	0.81
6	Pneumonia and influenza	13.1	12.5	18.2	1.46
7	Diabetes mellitus	9.8	8.7	20.2	2.32
8	Suicide	11.7	12.5	6.7	0.54
9	Chronic liver disease and cirrhosis	9.1	8.4	14.9	1.77
10	Atherosclerosis	3.6	3.6	3.8	1.06
11	Nephritis, nephrotic syndrome and nephrosis	4.8	4.1	11.3	2.76
12	Homicide and legal intervention	8.6	5.3	31.8	6.00
13	Septicemia	4.5	3.9	10.0	2.72
14	Certain conditions originating in the perinatal period ²	474.4	377.6	987.6	2.62
15	Congenital anomalies ²	207.0	206.2	226.5	1.10

* Rates per 100,000 population in specified group.

¹ Rank based on number of deaths.² Inasmuch as deaths from these causes occur mainly among infants, infant mortality rates are shown instead of age-adjusted death rates.

Source: National Center for Health Statistics. Advance Report of Final Mortality Statistics, 1987, Monthly Vital Statistics Report, Vol. 38, No. 5, Sept. 26, 1989, Tables 12 and 15, pp. 28, 29, 32.

Table 15

Age-adjusted mortality rates,* American Indians and Alaska Natives and selected U.S. populations, 1986

	Indian & Alaskan Native	United States			Ratio Indian to U.S. all races
		All races	White	All other	
All causes	551.4	541.7	518.0	693.1	1.0
Major cardiovas. disease	166.9	216.8	209.7	265.5	0.8
Diseases of heart	135.4	175.0	170.4	205.3	0.8
Cerebrovascular diseases	24.1	31.0	28.8	47.0	0.8
Atherosclerosis	3.5	3.7	3.7	3.7	0.9
Hypertension	1.7	5.0	3.8	14.6	0.3
Malignant neoplasms	83.4	133.2	130.4	154.1	0.6
Accidents	83.2	35.2	34.5	39.9	2.4
Motor vehicle	47.7	19.4	19.8	18.1	2.5
All other	35.5	15.7	14.7	21.7	2.3
Chronic liver disease and cir- rhosis	26.4	9.2	8.6	12.9	2.9
Diabetes mellitus	20.6	9.6	8.5	17.8	2.1
Pneumonia and influenza	15.2	13.5	12.9	17.1	1.1
Homicide	16.3	9.0	5.6	27.2	1.8
Suicide	15.0	11.9	12.7	6.8	1.3
Chronic obstructive pulmo- nary diseases and allied conditions	9.6	18.8	19.2	14.0	0.5
Tuberculosis, all forms	2.1	0.5	0.3	1.9	4.2

* Rate per 100,000 population.

Source: Department of Health and Human Services. Indian Health Service, "Trends in Indian Health, 1989," Table 4.9, p. 39.

Table 16

Death rates* by age and race: United States, 1986

Age	All races	White	Black	Ratio of Black to White
Under 1 year ¹	1,032.1	870.7	1,955.3	2.20
1-4 years	52.0	46.6	83.8	1.80
5-9 years	23.6	21.5	34.8	1.62
10-14 years	28.4	27.5	34.3	1.25
5-19 years	87.2	87.4	90.5	1.04
20-24 years	116.1	109.0	162.2	1.49
25-29 years	120.3	106.4	218.9	2.06
30-34 years	144.7	124.3	304.1	2.45
35-39 years	178.9	153.2	397.9	2.60
40-44 years	257.2	225.1	560.3	2.49
45-49 years	389.2	349.5	750.0	2.15
50-54 years	631.3	577.6	1,126.4	1.95
55-59 years	978.8	923.9	1,569.9	1.70
60-64 years	1,539.1	1,468.4	2,383.7	1.62
65-69 years	2,263.0	2,199.8	3,129.9	1.42
70-74 years	3,479.7	3,418.9	4,451.2	1.30
75-79 years	5,206.1	5,160.9	6,200.0	1.20
80-84 years	8,230.0	8,183.3	9,496.2	1.16
85 years & over	15,398.9	15,639.1	13,515.2	.86

¹Death rates under 1 year (based on population estimates) differ from infant mortality rates (based on live births).

*Deaths per 100,000 population in specific group.

Source: National Center for Health Statistics. Monthly Vital Statistics Report, Advance Report of Final Mortality Statistics, 1986, Vol. 37, No. 6, Supplement, Sept. 30, 1988, Table 2, p. 13.

Table 17

Age-specific mortality rates,* American Indians and Alaskan Natives, 1984-1986 and selected U.S. populations, 1985

Age	Indian & Alaskan Native		U.S. Rate			Ratio Indian to U.S. all races
	Number	Rate	All races	White	All other	
Under 1	1,177	1,131.0	1,067.8	916.3	1,720.8	1.1
1-4	335	91.8	51.4	46.2	73.8	1.8
5-14	296	31.3	26.3	24.8	32.8	1.2
15-24	1,581	161.4	95.9	92.9	110.3	1.7
25-34	1,682	240.1	123.4	108.4	204.5	1.9
35-44	1,709	370.9	207.2	181.0	372.4	1.8
45-54	2,107	636.9	516.3	471.5	805.2	1.2
55-64	2,941	1,232.5	1,282.7	1,218.7	1,781.2	1.0
65-74	3,439	2,332.0	2,838.6	2,772.8	3,412.8	0.8
75-84	3,328	5,258.6	6,445.1	6,406.8	6,827.6	0.8
85 +	1,952	10,885.0	15,480.3	15,757.0	12,516.1	0.7

* Rate per 100,000 population.

Source: Department of Health and Human Services. Indian Health Service, "Trends in Indian Health, 1989," Table 4.10, p. 39.

Table 18

Life expectancy at birth by race and sex: United States, 1940, 1950, 1960, and 1970-87

Year	All races			White		
	Both sexes	Male	Female	Both sexes	Male	Female
1987	75.0	71.5	78.4	75.6	72.2	78.9
1986	74.8	71.3	78.3	75.4	72.0	78.8
1985	74.7	71.2	78.2	75.3	71.9	78.7
1984	74.7	71.2	78.2	75.3	71.8	78.7
1983	74.6	71.0	78.1	75.2	71.7	78.7
1982	74.5	70.9	78.1	75.1	71.5	78.7
1981	74.2	70.4	77.8	74.8	71.1	78.4
1980	73.7	70.0	77.4	74.4	70.7	78.1
1979	73.9	70.0	77.8	74.6	70.8	78.4
1978	73.5	69.6	77.3	74.1	70.4	78.0
1977	73.3	69.5	77.2	74.0	70.2	77.9
1976	72.9	69.1	76.8	73.6	69.9	77.5
1975	72.6	68.8	76.6	73.4	69.5	77.3
1974	72.0	68.2	75.9	72.8	69.0	76.7
1973	71.4	67.6	75.3	72.2	68.5	76.1
1972 ¹	71.2	67.4	75.1	72.0	68.3	75.9
1971	71.1	67.4	75.0	72.0	68.3	75.8
1970	70.8	67.1	74.7	71.7	68.0	75.6
1960	69.7	66.6	73.1	70.6	67.4	74.1
1950	68.2	65.6	71.1	69.1	66.5	72.2
1940	62.9	60.8	65.2	64.2	62.1	66.6

¹ Deaths based on a 50-percent sample.

Source: National Center for Health Statistics. Advance Report of Final Mortality Statistics, 1987. Monthly Vital Statistics Report, Vol. 38, No. 5, Supplement, Sept. 26, 1989, Table 4, p. 14.

Table 18

Life expectancy at birth by race and sex: United States, 1940, 1950, 1960, and 1970-87—
Continued

	All other					
	Total			Black		
	Both sexes	Male	Female	Both sexes	Male	Female
1987	71.3	67.3	75.2	69.4	65.2	73.6
1986	71.2	67.2	75.1	69.4	65.2	73.5
1985	71.2	67.2	75.0	69.5	65.3	73.5
1984	71.3	67.4	75.0	69.7	65.6	73.7
1983	71.1	67.2	74.9	69.6	65.4	73.6
1982	71.0	66.8	75.0	69.4	65.1	73.7
1981	70.3	66.1	74.4	68.9	64.5	73.2
1980	69.5	65.3	73.6	68.1	63.8	72.5
1979	69.8	65.4	74.1	68.5	64.0	72.9
1978	69.3	65.0	73.5	68.1	63.7	72.4
1977	68.9	64.7	73.2	67.7	63.4	72.0
1976	68.4	64.2	72.7	67.2	62.9	71.6
1975	68.0	63.7	72.4	66.8	62.4	71.3
1974	67.1	62.9	71.3	66.0	61.7	70.3
1973	66.1	62.0	70.3	65.0	60.9	69.3
1972	65.7	61.5	70.1	64.7	60.4	69.1
1971	65.6	61.6	69.8	64.6	60.5	68.9
1970	65.3	61.3	69.4	64.1	60.0	68.3
1960	63.6	61.1	66.3			
1950	60.8	59.1	62.9			
1940	53.1	51.5	54.9			

Table 19

Life expectancy at birth, by race and sex for American Indians and Alaskan Natives and total U.S. White population, 1940 to 1980

Decennial Census Year	Indian & Alaskan Native			U.S. white population		
	Both sexes	Male	Female	Both sexes	Male	Female
1980	71.1	67.1	75.1	74.4	70.7	78.1
1970	65.1	60.7	71.2	71.7	68.0	75.6
1960	61.7	60.0	65.7	70.6	67.4	74.1
1950	60.0	58.1	62.2	69.1	66.5	72.2
1940	51.0	51.3	51.9	64.2	62.1	66.6

Note: Life expectancy at birth based upon 3 years of mortality experience centered in the Decennial Census Year specified for the American Indian and Alaska Native population and for the single year specified for the U.S. White population. Data for 1940 and 1950 for both population groups are for Continental U.S. American Indian and Alaska Native data for 1960-1980 are for States in which IHS had responsibilities (1960 & 1970—25 States, 1980—28 States) and U.S. White population 1960-1980 are for 50 States and the District of Columbia.

Source: Department of Health and Human Services. Indian Health Service, "Trends in Indian Health, 1989," Table 4.30, p. 57.

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A. Introduction**1. Overview of Findings**

In the past two decades, government and private sector efforts to foster health care and provide preventive medical services have resulted in significant improvements in such areas as smoking reduction and reduced mortality from heart disease. In 1980, the Public Health Service (PHS) published a set of national health objectives to be achieved by 1990. (1) These objectives include 226 specific disease prevention and health promotion targets. The Midcourse Review of these objectives (2) has shown substantial progress overall for Americans. However, especially given differences in indicators by racial, ethnic, and economic status, they also highlight areas requiring redoubled efforts to achieve improvements. The differences in health trends revealed by analysis of progress towards achieving the 1990 national health objectives should stimulate considerable policy discussion and may further increase public attention to disease prevention and health promotion. In the year 2000 national health objectives (which PHS is currently developing) particular emphasis is being placed on improving the health status of disadvantaged populations. These objectives will be published during the Summer of 1990.

In this chapter, two main areas of preventive health are addressed. First, data are presented pertaining to preventive services, including medical procedures, prenatal care and practices, and immunizations. (Further

discussion of prenatal care can be found in Chapter IV, Reproductive Health.) Second, health-related personal habits (such as smoking) and nutrition-related data are examined. Prevention indicators targeted in the 1990 national health objectives are discussed as appropriate. Throughout, preventive health practices of the disadvantaged will be compared with those of the general population.

Primary prevention can be credited with the large reductions in morbidity and mortality which have occurred since the last century, when infectious, mostly acute, diseases were the leading causes of death. (2) In the latter half of the twentieth century, at least in industrialized countries, chronic diseases have taken the lead. All three levels of prevention are now concentrated primarily on chronic diseases, particularly heart disease, cancer, and stroke, and on physical injuries, which follow them as the fourth leading cause of death in this country. (3) (For further discussion of injuries, see Chapter VI, Injuries.) However, control of infectious diseases still demands attention, therefore both chronic and infectious areas of disease prevention are presented in this chapter. Some information may be covered as well in Chapter V, Chronic and Acute Disease Conditions.

The data and discussion included in this chapter show that although the frequency of general checkup exams does not appear to differ appreciably among the major

racial/ethnic groups in the United States (although qualifications regarding the data are noted), it does differ by socioeconomic status. The poorest and the uninsured, in all age categories and ethnic groups, are the least likely to have such checkup exams. Further, only the more commonly utilized screening procedures, such as the Pap smear and breast exam, are as likely to be received by the largest minority groups (Blacks and Hispanics) as by the rest of the population. Other screening procedures such as mammography, digital rectal exam, blood stool test, and proctoscopy, show greater racial/ethnic variation in usage. Whites are consistently more likely to be screened using these procedures.

Preschool minority children are less likely to be immunized against the eight major childhood diseases. Although effective immunizations are currently available to protect children from diseases of major importance, including poliomyelitis, mumps, tetanus, etc., the proportion of U.S. preschool children (age 1 to 4) fully immunized is only 75 percent, with lower proportions in city centers and among minority races.

The proportion of pregnant women receiving prenatal care early enough to reduce preventable ill health in themselves and their unborn children varies significantly by race, ethnicity, and educational attainment (which can be considered a proxy indicator for economic status). Minority women have made impressive gains in initiating early care within the past 15 years, although a

significant number still do not receive adequate prenatal care. Also, less-educated and low-income women are more likely than others to continue smoking during pregnancy, a practice with important implications for infant health.

Surveys of self assessment of health continue to indicate that the responses vary by race and income; Black Americans and lower-income people are more likely to consider themselves to be in poorer health. Self-assessment of health, generally accepted as a reasonably valid measure of health status, may have implications for the propensity to practice preventive health behaviors.

With regard to individual health habits, the largest disadvantaged racial and ethnic minorities (Blacks and Hispanics) are generally more likely to smoke than are non-Hispanic Whites. While household surveys indicate that use of alcoholic beverages varies minimally by ethnic group, with variations by income, age, and sex being more pronounced, the accuracy of such surveys for minority and poor populations limits their usefulness in identifying health promotion problems. Similarly, although some studies indicate that illicit use of drugs overall does not vary much by racial/ethnic group, other data sources indicate that illicit drugs pose special health risks in Black and Hispanic communities. Finally, overweight is a particular problem among Blacks and Mexican Americans, especially

women, and among low-income populations generally.

2. Data Sources and Limitations

Much of the information published concerning prevention topics focuses on personal behaviors, perhaps because of the proven relationship between these behaviors and subsequent disease. (4) However, the role of environmental factors in health is considerable. Environmental controls—as in the restriction of indoor smoking—have become increasingly recognized in recent decades as important public health measures. (5) However, documenting environmental factors in the health of subpopulations is more difficult than obtaining behavioral reports.

Self-reports, which are the basis for much of the behavioral information discussed in this chapter, have certain obvious drawbacks. People may fail to report accurately for various reasons, such as faulty memory or deliberate distortion. For example, people have been found to overstate their height and to understate their weight. (6, 7) As the data are reviewed for group differences, the reader should keep in mind that statements concerning these differences are bound to be imprecise when based on self-reports. Further, in some cases the self-reporting may be systematically biased along some of the principal variables of interest here (socioeconomic status, age, sex, education).

Another difficulty inherent in the collection of some of the data used in this chapter stems from the use of

household sampling. Sampling by household cannot or does not reach a completely representative sample of the population. Finally, there is the generic problem of selection bias. This is true especially for data related to illicit behavior; i.e., drug use, which may result in unrepresentative samples. Similarly, drug-use behavior data obtained from school surveys are likely to be inaccurate because of the inability to obtain responses from school dropouts and those not present or avoiding contact. (8) Again, caution is in order when considering group differences, because of the possibility of uneven responses across subgroups.

The data from the National Ambulatory Medical Care Survey (NAMCS) have important limitations for purposes of comparing general medical exams. The patient's racial and ethnic classification is obtained from the physician, who in some cases may not have established it accurately. Further, general preventive exams are probably not the precise reason for all the visits whose reason was given as "general medical examination". Perhaps the most important limitation stems from the restricted universe of health care providers sampled by the NAMCS, office-based physicians. Minorities and low-income groups are less likely than the general population to receive medical care at such sites, (9) relying relatively more frequently on hospital outpatient departments and community clinics. It should also be recognized that the data from the NAMCS were not adjusted for differences in the sex and age composition of the patients making visits, so that, for example, differences

in gender-related exams may result from noncomparable underlying sex distributions rather than from real differences in utilization of services.

B. Preventive Examinations

1. General Medical Examinations

The National Ambulatory Medical Care Survey collects information from nonfederally employed, office-based physicians about the characteristics of patients making office visits and the nature of the visits. Information about diagnostic services delivered during office visits for general medical examinations during 1985 is shown in Tables 1 and 2. The median number of diagnostic services received during the visit was 3 for all racial/ethnic subgroups in Table 1. For 1985, in an estimated 4.8 percent of the nation's total 636.4 million physicians office visits, the patient's primary reason for the visit was to receive a general medical examination. Many of these visits can be presumed to have occurred for general preventive purposes (and some others in conjunction with insurance applications). When these visits are categorized by race, there are no differences between the two racial groupings of ambulatory patients in the survey (White versus Black and Other); the proportion of visits for conducting a general medical examination was the same, 4.8 percent (Table 1). However, when categorized by ethnic background (Hispanic versus non-Hispanic), there were differences; 3.2 percent for Hispanics versus 5.0 percent

for non-Hispanics. These data can be viewed from another perspective.

Table 1 shows that the fraction of office visits for general medical exams is about the same for each racial/ethnic group. But it is important to also estimate the number of such visits per member of each group. If the people coming to this aggregate of physicians were to be in proportion to their numbers in the total U.S. population in 1986–87, then the ratio of general medical exams to population would be:

	Exam/ Per- sons Ratio	Ratio Rela- tive to Whites
White	.1357	—
Black & Others	.0840	0.62
Hispanic	.0685	0.50

Approximately two-thirds as many Blacks and Others, and about half as many Hispanics had a visit for a general exam as did Whites.

General examination visits by Whites are somewhat more likely than those by Blacks and Others to result in no diagnostic procedures (10.2 percent vs. 7.9 percent) (Table 2). In most of the remaining 14 categories of diagnostic service, differences among the race groups' rates of receipt of services were not significant, although Whites were slightly more likely to have no diagnostic service (10.2 percent for Whites versus 7.4 percent for Blacks and others). However, Whites were about twice as likely as Blacks and others to receive X-rays other than chest X-rays. Conversely, Blacks and others were three times as likely to have a chest X-ray. Visual acuity exams are received by racial minorities

about one-third more often than by Whites.

The differences between Hispanics and non-Hispanics were more substantial. For example, Hispanics were more likely than non-Hispanics to have had no diagnostic tests (14.7 percent vs. 9.7 percent). General exam visits by Hispanics were substantially more likely to include breast examinations, pelvic exams, Pap tests, "other" lab tests, and "other" diagnostic services. Hispanics were much less likely to have rectal exams, urinalysis, hematology, blood chemistry, and chest X-rays. They were also less likely to have visual acuity tests, blood pressure exams and EKGs.

It is likely that Mexican Americans in particular receive less general preventive care than the rest of the population; data from the 1978-1980 National Health Interview Surveys indicated that Mexican Americans had the lowest physician visit rate (for all purposes combined) of any group studied. (10) The legal status of the individual (i.e., documented or undocumented alien status), may be an important factor in use of preventive health services.

2. Preventive Medical Procedures

2.1 Pap Smears

Cervical cancer is one of the most readily detectable and treatable cancers; its detectability is due to the existence of a simple, safe, and relatively inexpensive procedure. Physicians specializing in reproductive health have tended to endorse an annual Pap smear as the best preventive

practice for most women, although the appropriate interval between tests is still a matter of physician discretion after three consecutive annual negative tests. (11)

The age-adjusted incidence rate of invasive cervical cancer decreased 35 percent between 1973 and 1985. Death rates have been declining at the same rate, regardless of age or race. Nevertheless, in 1985, the age-adjusted incidence rate was twice as great for Black women as for White women and the age-adjusted death rate was two and a half times as great. (12) In 1987, less than half of American women 18 years of age and over reported having had a Pap smear for early detection of cervical cancer within the previous year (Table 3). The data in Table 3, collected through face-to-face interviews during the 1987 National Health Interview Survey (NHIS), indicate that Black women, across the age groups, were as likely as or more likely than White women to have had a Pap smear: 52.8 percent vs. 47.9 percent. Young Hispanic women (age 18 to 29) and middle-aged Hispanic women (age 45 to 64) are somewhat less likely than non-Hispanic women in the same age categories to have had one, but the overall rates for the two ethnic groups were close.

During the past 10 to 15 years the use of the Pap Smear as a screening procedure among Black women began to surpass its use among White women. In 1973, Black women were somewhat less likely than Whites to have had a Pap test within the previous two years (59.9 percent vs. 64.2 percent, age-adjusted), (12) according to a recently published analysis of NHIS data. Age-adjusted data for 1973 and 1985 suggest that

Black women and older women have experienced the largest increases in use of the Pap test in recent years. (12)

Despite the gains since 1973 among Black and older women, inequities remain in the use of preventive care. When race, age, and income (bifurcated at 125 percent of the poverty level for family size) were analyzed jointly in the 1985 NHIS data, it was found that poor women in each age-race subgroup were less likely than nonpoor ones to report a Pap test within the past two years, except possibly among Black women in the oldest age group (60 to 79 years). (12)

Further evidence of existing inequities are based on an earlier study (13) using 1982 NHIS data, to examine the relationship between insurance coverage and preventive services including screening for cervical and breast cancer. Lack of insurance was most prevalent among socioeconomically disadvantaged women at high risk for disease and was a strong predictor of the failure to receive screening tests. Among the women studied, Blacks were most likely to be uninsured, followed by the poor, rural, and those without a high school education. Conversely, for most age groups, higher income and higher education are associated with a higher rate of insurance coverage and also of use of the Pap test. For example, college graduates were 60 percent more likely than high school dropouts to have had a Pap test within the last year (Table 4).

2.2 Breast Examination and Other Screening Procedures

Another preventive procedure promoted for

women is the breast examination by a health practitioner for signs of breast cancer. The incidence of breast cancer among White women was almost 20 percent greater than for Black women in 1985. However, Black women are at a significant disadvantage to White women in terms of prognosis; only 62 percent of Black women survive five years from the time of diagnosis compared to 75 percent of White women. Although this is partly due to the fact that breast cancer is not as localized in Black women upon diagnosis; this does not fully account for the difference. (12)

In 1985, the percentage of women who had had a breast examination within the previous year varied by race, ethnicity, education, income, and age (Table 4). According to the most recent available data, overall, Black women aged 40 years and older were as likely as White women of the same age group to report a breast exam; 45.9 percent vs. 43.5 percent (Table 5). Young and older Hispanic women were less likely than their non-Hispanic counterparts to have had the exam, but overall rates were similar.

Women have long been urged to practice self-examination of their breasts as an additional preventive practice aimed against breast cancer. More than 85 percent of female respondents to the NHIS in 1985 stated that they knew how to do breast self-examination (BSE) but, among these, only 37 percent reported doing it 12 or more times a year (Table 6). Examining racial/ethnic differences, the NCHS report noted that:

"Racial differences in the prevalence of knowledge of BSE were not found for women in the youngest

age group, but among those 30 years and over, White women were more likely than Black women to know the procedure. . . . Interestingly, among women who knew how to examine their own breasts, Black women were more likely (46 percent) than White women (36 percent) to actually do so. Hispanic women were less likely to know BSE (75 percent) than non-Hispanic women (88 percent), but among those who knew the procedure, Hispanic and non-Hispanic women were about equally as likely to practice it regularly." (14)

As for the effect of education, "Knowledge of BSE was highest among college graduates (94 percent) and lowest among women who had not completed high school (76 percent). Actual practice of BSE among those who knew how to do it, however, did not show any clear association with level of educational attainment." (14)

The following screening procedures were examined by the 1987 National Health Interview Survey for persons aged 40 years and older, by age, race, and sex, when appropriate: mammography (Table 7), digital rectal exam (Tables 8 and 9), blood stool test (Tables 10 and 11), and proctoscopy (Tables 12 and 13). For these less utilized screening procedures, Whites were much more likely to be screened than Blacks, and Hispanics were consistently the least likely to be tested. More specifically, the percentage of women having a mammography exam within the past year varied by race/ethnicity (Table 7); Whites were approximately 20 percent and 30 percent more likely to be screened than Blacks and Hispanics, respectively. White men were

twice as likely to have had a digital rectal exam, blood stool test, or proctoscopy within the past year as compared to Hispanic men (Tables 8, 10, and 12). The largest racial differential, for both sexes, is found in the percent population that has had a blood stool test in the past year; among men, the percentages are 12.4 for Whites and 6.6 for Blacks (Table 10), and among women, the percentages are 15.4 for Whites and 12.5 for Blacks (Table 11).

2.3 Blood Pressure Test

High blood pressure is a risk factor for several leading causes of death in the United States that affect some disadvantaged groups disproportionately. (For further discussion of cause-specific mortality, see Chapter II, Vital Statistics; for hypertension, see Chapter V, Chronic and Acute Disease Conditions.) Eighty-five percent of the U.S. adult population reported having been tested for high blood pressure within the past year, as indicated by the 1985 NHIS (Table 14). This high level is fairly stable across the various demographic subgroups. For example, the largest difference by race among the eight sex-age groups in the report was 7.3 percentage points; this differential involved men 65 years and over, wherein Blacks reported less testing than Whites, although generally the testing rate for Black Americans was slightly higher than that for Whites. Young Hispanic men reported the lowest level of testing of all ethnic or racial age groups (64.4 percent); and among the income groups, adult males (age 30 to 44) with family incomes less than

\$10,000 reported the least testing (66.1 percent). No significant differences were seen for Black and White women, or women of different income levels.

3. Prenatal Examinations and Pregnant Women's Health Habits

Prenatal care has played a major role in the overall downward trend in infant mortality in the United States. Failure to receive prenatal care during the first trimester can cause missed opportunities to prevent irreversible damage and lifelong handicaps to the newborn. Low birthweight (LBW) is one of the strongest determinants of infant mortality; (15, 16) however, although prenatal care is crucial in preventing LBW, studies have indicated that a complex network of interrelated variables is involved. (17) Unfortunately, few studies have incorporated the entire range of factors—sociodemographic, economic, health services, cultural—in a single investigation. (18, 19) LBW is discussed extensively in Chapter IV, Reproductive Health.

Over 98 percent of the women with live births in 1986 sought prenatal care before delivery. However, the time during gestation when care was sought, and the number of prenatal care visits they made, varied according to the mother's racial/ethnic group and educational attainment (see Tables 15 and 16). Differences in prenatal care are reflected in outcomes; Chapter IV, Reproductive Health, includes data showing greater rates of infant mortality and low birthweight for the groups that tend to receive less prenatal care.

A higher proportion of non-Hispanic Whites (81.9

percent) than non-Hispanic Blacks (60.4 percent) and Hispanics (61.0 percent) visited a physician for the first time during the first trimester of pregnancy, according to vital records data for 1987 from 23 states and the District of Columbia (Table 15). In the grouping used in this data set, Hispanics may include White and Black women (less than 5 percent of Hispanic women identify themselves as Black). A similar differential for White and Black women overall (wherein Hispanic women may be included in either race group) was noted in a broader data set as of 1986. There it was found that 79.2 percent of White women initiated prenatal care in the first trimester, compared to 61.6 percent of Black women (Table 16). A study based on 1982 data (20) indicated that the very large race differences in receipt of first trimester prenatal care was not significant when socioeconomic status differences such as education, occupation, income, and Medicaid status were controlled.

Among other major race groups in the U.S., data for 1986 show that Asian and Pacific Islander women tend to have high rates of early care (i.e., care initiated in the first trimester); however, Hawaiian women and Asian and Pacific Islander women other than Chinese, Japanese, and Filipinos initiated early care at rates below the national average. American Indian women, however, had the lowest rate of early care among the racial groups, 60.7 percent (Table 16).

Despite the substantial difference between Black and

White women receiving early prenatal care, a time trend analysis of the 40-state data set showed an appreciable narrowing of the gap during the period 1970–83. From 44.4 percent in 1970, the proportion of Black mothers receiving early prenatal care rose each year, peaking at 62.8 percent in 1980. This was followed by a slight downtrend, to 62.3 percent in 1981 and 61.4 percent in 1982 and 1983. During the same period, according to the analysts, "the proportion of White mothers with early care increased from 72.4 percent in 1970 to 78.7 percent in 1980, and remained essentially stable during 1981–83." (21) The proportion of mothers receiving care beginning late in the pregnancy (seventh to ninth month), or no care at all, also varies markedly by racial/ethnic group. Table 15 shows that non-Hispanic Black and Hispanic women are roughly three times as likely as non-Hispanic Whites to receive care beginning late in the pregnancy or not at all. Recent trends in late or no prenatal care suggest that since 1980 there has been a slight reversal of earlier improvements in this indicator, particularly among Black women and Mexican American women (Tables 17 and 18). In view of the long-term health importance attached to early care, this development has caused concern among policy analysts. (22)

The observed racial/ethnic differences in obtaining prenatal care, to some extent, reflect differences between the races in several other factors that are associated with when care is initiated. These factors include differences in educational attainment, marital status, and maternal age. Tables 19, 20,

and 21 illustrate the differences in the initiation of prenatal care according to these factors for White and Black mothers. For both groups, delayed prenatal care and no care occur more frequently among young, less educated, unmarried mothers.

Moreover, Table 22 illustrates that higher percentages of Black and Hispanic mothers than White mothers are in these high risk categories for delayed and no prenatal care. Consequently, on the whole, higher percentages of Black women and Hispanic women than of White women seek first care late in pregnancy or not at all. When women of similar marital status, age, and educational attainment are compared, the racial/ethnic differences in prenatal care initiation lessen but they do not disappear; for example, married Black women are less likely to receive early care than their White counterparts. However, the difference between those two groups is smaller than the overall difference between White and Black women (Table 20).

One of the pregnancy and infant health goals identified by the National Health Objectives is that by 1990, the proportion of women in any geographic, racial, or ethnic group who obtain no prenatal care during the first trimester should not exceed 10 percent. It is unlikely that this objective has been reached. Some reasons for the shortfall are discussed later in this chapter in the section on access to clinical preventive services.

4. *Health Habits Related to Pregnancy*

Certain patterns of health-related behavior that are amenable to prevention may affect the course of a woman's pregnancy. Behaviors proven repeatedly to have harmful results on the baby *in utero* are cigarette smoking, excessive alcoholic beverage intake, and use of certain drugs. Infants born to mothers who smoke are more likely to have retarded fetal growth and low birthweight or to be stillborn. (23) Babies born to mothers who consume alcoholic beverages excessively may experience retardation, fetal alcohol syndrome, and other related problems; there is no general agreement on the level of alcohol consumption which results in these problems. These are discussed in detail in Chapter IV, Reproductive Health. Information particularly relevant to an understanding of prevention issues is summarized in this section.

Variables other than race appear to have exerted a stronger influence on smoking in pregnancy. According to the NCHS, the 1985 data showed that

"Fifty percent of women 18–24 years of age with less than 12 years of education had smoked in the year before the birth of their last child compared with 14 percent of women aged 30–34 with 16 years of education or more. Low income women were almost twice as likely to have smoked during their pregnancy (42 percent) as women in the highest income group (23 percent). . . . Non-Hispanic women were about twice as likely as Hispanic women to have

smoked during pregnancy (33 vs. 17 percent, respectively), with substantial differences persisting across all age groups. Finally, smoking during pregnancy was most common among women in the Midwest (37 percent) and least common among women in the West (26 percent)." (14)

Smoking cessation by pregnant women is of considerable interest to health officials, particularly in view of the need to evaluate progress toward the following national health objective:

"By 1990, the proportion of women who smoke during pregnancy should be no greater than one-half the proportion of women overall who smoke." (2)

Available data sets appear to have different findings on the question of whether pregnancy-associated cessation of smoking is more common among Black or White women. The 1985 NHIS found White women slightly more likely to initiate smoking changes than Black women. However, 1985–86 data from the CDC's Behavioral Risk Factor Surveillance System, which used analysis employing a different measure of quitting (namely, the difference in prevalence between pregnant and nonpregnant women) and a somewhat less representative sample of U.S. women than the 1985 NHIS, found that a higher percentage of Black women smokers quit during pregnancy. (24) The 1985 NHIS data also suggest that Hispanic women smokers are generally almost twice as

likely to quit smoking when pregnant than non-Hispanics.

Other important factors besides race or ethnicity in smoking cessation were income and education, according to the NHIS. Quitting tends to increase by income and education category. (14) Changes in alcohol consumption habits during pregnancy are less pronounced than changes in smoking patterns. As of 1980 (the latest overall data available), it appeared that a relatively low proportion of women drinkers changed their drinking patterns during pregnancy and that White women and women over 35 are less likely than others to stop drinking. (25) The 1982 National Survey of Family Growth indicated that Black women were more likely never to drink alcoholic beverages during pregnancy than White women (67.1 percent and 51.8 percent, respectively). For White women frequent drinking during pregnancy was more common among those who were college educated, employed as professionals or managers, or who had incomes at least three times that of the poverty level. In contrast, more frequent drinking among Black women was more common among those who had not completed high school and who received Medicaid. (20)

One of the national health objectives that the Public Health Service hopes to achieve by 1990 is that 85 percent of all women of childbearing age should be able to choose foods wisely (i.e., to state special nutritional needs of pregnancy) and understand the hazards of smoking, using alcohol, pharmaceutical products, and other drugs

during pregnancy and lactation. As indicated by the results of the knowledge of fetal alcohol syndrome, by 1985 the only group approaching this objective in regard to alcohol consumption was females with 16 years or more education.

C. Immunization

The childhood infectious diseases of major importance in the U.S. for which vaccines exist are poliomyelitis, mumps, tetanus, diphtheria, rubella, pertussis (whooping cough), measles, and haemophilus type b. They can all cause permanent disability and, in some cases, death. Effective immunizations are currently available to protect children from these diseases; however, the proportion of U.S. preschool children (ages 1 to 4) fully immunized against all of them is only about 75 percent, with lower proportions in city centers and among minority groups. Furthermore, actual protection levels may be even lower, as will be explained below. Children vaccinated in publicly funded settings are more likely to be poor and members of minority groups than the remainder, who are immunized by private practitioners.

The control of childhood disease requires constant vigilance because, except for smallpox, the causal agents have not been eradicated. For example, there were 385,000 reported cases of measles in the U.S. in 1963, when the vaccine was first developed; there were only 22,000 reported cases by 1968. A drop in measles immunization levels in the early 1970s resulted in over one-third of the children under 15 years of age being inadequately protected by 1976-77, as was seen in the consequent upsurge in

reported incidence of measles at that time. (26) Due to a renewed effort to achieve better immunization levels, between 1981 and 1987 the annual incidence of measles remained within a substantially improved range—1,497 cases (1983) and 6,282 cases (1986). (27)

In terms of the 1990 national health objectives for control of immunizable childhood diseases, measles does not appear to be approaching the 1990 target of less than 500 cases, and a declining trend in cases of mumps reversed in 1986; however, 1979 and 1987 data reported in Table 23 suggest that diphtheria and poliomyelitis targets have been met, and progress toward objectives for tetanus, rubella, and congenital rubella syndrome has been good. (27) It is believed that an increase in reported pertussis cases over this period reflects improved diagnosis and surveillance of this illness. (27)

School-age children have achieved high immunization levels, thanks largely to the 1977 U.S. Initiative on Childhood Immunization. As a result of the initiative, all states now require proof of immunization for school enrollment. (28) Records of kindergarten and first-grade school entrants—the most accurate measure of immunization levels—indicated that for the 1986-87 school year, 97 percent were fully immunized. (27)

The immunization status of preschool children, on the other hand, is much harder to control. It appears to be falling considerably short of the national health objective relating to this age group, which states: "By 1990, at

least 90 percent of all children by age 2 should have completed their immunization series: measles, mumps, rubella, polio, diphtheria, pertussis, and tetanus." Data from the most recent U.S. Immunization Survey, conducted in 1985, found that 77 percent of the two-year-olds whose parents had consulted immunization records at home had received the basic series. (27) Due to inadequate funds, the U.S. Immunization Survey was discontinued in 1986. (29)

Additional data from the 1985 survey, covering children ages 1 to 4, are shown in Tables 24 and 25. Table 24 presents results from the entire sample, while Table 25 shows findings from the subset of respondents who, rather than report their children's immunization status from memory, checked vaccination records prior to or during the survey. Table 25 indicates higher immunization levels than Table 24. Some authorities believe that Table 25 more accurately portrays true immunization levels. (2) However, it should also be noted that only 35 percent of White respondents and 19 percent of respondents of other races consulted records for the 1985 survey, and failure to consult a record is likely to be associated with nonoccurrence of the immunization itself.

By either measure, however, trends by race and area of residence indicate that disadvantaged preschool children do not receive immunizations as often as others. Based on 1985 data in Table 24, comparing Whites and all other races, the immunization gap ranges from 13.9 percentage points for rubella to 20 percentage points for diphtheria-tetanus-

pertussis (DTP). The percentage point difference is greatest for DTP despite the fact that, for both race groups, the DTP series is completed at least as often as any other immunization. In the data based on records checks, DTP immunization levels are the highest, but the racial differential is still 13.3 percentage points (see Table 25).

Differences in immunization levels are also seen when data are analyzed by area of residence, i.e., (1) Inside metropolitan statistical area (MSA) central city, (2) Inside MSA, remaining areas (i.e., non-central areas of MSAs), and (3) Outside MSA. Children residing outside MSAs and in MSA non-central city areas have relatively high immunization rates—generally 60 percent or greater—while children living in central city MSAs have rates below 60 percent. The percentage point difference between the two MSA groups is not as great as that between the race groups, but it is still substantial, ranging from 12.9 percent for DTP to 7.1 percent for rubella, based on Table 24. Data for comparing immunization rates among ethnic groups are not available.

Recent time trends in immunization rates for preschoolers have failed to show steady progress toward national health objectives. Table 24 suggests that for all demographic groups measles, mumps, and rubella protection peaked in the late 1970s or early 1980s, while DTP and polio protection appear to have peaked even earlier. However, in all these cases, the time-related patterns operate at generally

lower immunization levels for the disadvantaged demographic groups.

Childhood diseases covered by the immunization survey have been the subject of control efforts for many years; a new area of protection was introduced in 1985. The target was haemophilus influenza type b (Hib), which causes much of the bacterial meningitis seen among children from two months to five years of age. The CDC has suggested that day care attendance is a significant risk factor for acquisition of this disease. (30)

An improved vaccine, recommended for children 18 months of age, was licensed in 1987. However, early experience with distribution of the original vaccine, in 1985, was not favorable for disadvantaged children. This occurred because the vaccine, a high-cost one, was purchased by only a few state, county, or city governments. (2) In consequence, the 50 percent of U.S. children immunized by public agencies were very unlikely to have received the 1985 Hib vaccine. (2) Although the cost to states declined the following year, the experience highlights the dependence of many children on public budget exigencies for immunization protection. (2) National data on Hib coverage do not exist; therefore, it is difficult to evaluate more recent racial/ethnic and socioeconomic differences in protection.

Adult immunization is of increasing concern to health authorities, especially in view of evidence that progress toward the 1990 national health objectives in that area is disappointing. (27) Two of the objectives relate to influenza and pneumococcal pneumonia, for which the target groups include

individuals with certain debilitating conditions and persons 65 years or older. These two diseases cause 60,000 deaths annually among aged persons, but only 22 percent of persons 65 years of age or older are protected from influenza each year, and only 10 percent have ever received a pneumococcal vaccine. (27) Influenza protection, as indicated by U.S. Immunization Survey results from 1979 through 1985, has been consistently higher among White older people than among those of other races (Table 26).

A 1988 study of residents in housing communities for older persons in Georgia's DeKalb and Fulton counties found a racial difference in influenza protection between White and Black respondents aware of the vaccine. Among those aware, Whites were 60 percent more likely than Blacks to have been immunized in the past year. (27) There was no statistically significant racial differential for pneumococcal protection among those aware of the vaccine. It should be noted that the percentage of those aware of the pneumococcal vaccine was considerably lower than the percentage aware of the influenza vaccine.

D. Overall Health Self-Assessment

How one perceives the state of one's health may motivate curative or preventive health actions. Possible evidence for this proposition was found in the National Medical Care Utilization and Expenditures Survey 1980 data. The survey found that, the better one's

perceived health status, the fewer physician visits are made. (31)

Before proceeding with comparisons, problems in using self-perception of health as a health-status indicator should be mentioned. The validity of these indices is questionable. Although there is evidence that self-perceptions of health have some basis in fact, (32) there are serious pitfalls in using self-estimation of health to make judgments about physical status. (33) The subjective nature of self-report and interviewer judgment invites a variety of biases. Researchers studying the social psychology of health have noted that actual or objective health, measured by standard rating instruments, is different from perceived or subjective health as measured by a respondent's assessment. (34) Several researchers have shown that people tend to evaluate their health in reference to their peers. For instance, older Blacks are generally more negative than older Whites in evaluating their health even after controlling for objective health conditions. (35) An additional limitation stems from survey methodologies that base reports for some family members on one respondent's perception.

Most people in the civilian noninstitutionalized population assess their own health as very good or excellent. In the 1986 NHIS, two out of five respondents assessed their health as excellent; two out of three (67.2 percent) perceived their health as very good or excellent (data not shown). However, Whites were over 40 percent more likely than Blacks to judge their health as excellent, and 18 percent more likely to judge their health as good.

By the same token, Blacks were nearly twice as likely as Whites to consider their health fair or poor (Table 27). Also, strong trends exist within many of the health status categories by income, in that people of lower economic status tend to perceive their health as poorer.

NHIS data for 1987 show that, across all age groups, Black Americans have a relatively poor perception of their own and their family members' health status (Table 28). The percentage point gap in the perception of excellent health ranges from 7.1 among older persons to 16.4 for persons ages 5 to 17.

The recent NHIS data indicated that the 1980s have not demonstrated any changes in these basic results. Perceived health status estimates for 1981, 1983, and 1986 suggest stability in the race-perception relationship, as indicated, for example, in the proportions with fair or poor perceived health status (Table 27). Moreover, estimates for 1985 through 1987 were all highly congruent, according to NCHS. (9)

E. Lifestyles

Several areas of health behavior, often associated with so-called "lifestyle" preferences, have important implications for health and illness differences among sociodemographic groups. In this section, cigarette smoking, alcohol and illicit drug use, and obesity are treated, and the differences in the lifestyle indicators among the disadvantaged are discussed. The subject of AIDS and its preventability are discussed at length in Chapter VI.

The National Health Interview Survey (NHIS) has collected data on seven

specific health habits in Alameda County, California since the mid 1960s. The health habits were: having never smoked, drinking less than five drinks at one sitting, sleeping 7 to 8 hours a night, exercising, maintaining desirable weight for height, avoiding snacks, and eating breakfast regularly. These seven habits have been related to current and subsequent health status as well as long-term survival. (36, 37) It should be noted that a common definition of heavy drinker is "five or more drinks at one sitting", so the reader is cautioned not to consider this a good health habit.

Table 29 shows the percent distribution for the total number of health habits of the adults surveyed. Overall, persons in the older age groups were more likely to have a greater number of good habits than younger persons. Blacks tended to have fewer good habits than Whites: 46 percent of Black men and 49 percent of Black women, compared with 36 percent of White men and 31 percent of White women, had three or fewer good health habits. Of all the subgroups surveyed, it appears that Black women are most likely to have lifestyles that would be considered unhealthy using the Alameda criteria; (38) only 4 percent of Black women had scores of six or seven good health habits, compared with 12 percent of White women (Table 29).

1. Cigarette Smoking

Smoking is a cause of numerous health problems, such as coronary heart disease, cancers of various sites, and atherosclerotic cerebrovascular and peripheral vascular disease.

Cigarette smoking is the leading cause of chronic obstructive lung disease and increases the risk of certain types of cancer. The harm to fetuses caused by smoking during pregnancy includes possible spontaneous abortion, retarded fetal growth, and fetal or neonatal death. (39) In 1986, approximately 390,000 Americans died as the result of past and current smoking. This represents more than one of every six deaths in the United States. Dr. Otis R. Bowen, past Secretary of Health and Human Services, stated that "Smoking remains the single most important preventable cause of death in our society." (40)

Since the release of the first Surgeon General's Report on Smoking and Health in 1964 (41), the proportion of adult smokers (aged 20 years and older) has declined from 40.4 percent in 1965 to 28.8 percent in 1987. (42) Data from the NHIS for 1987 indicate a smoking prevalence of 31.2 percent for men, 26.5 percent for women, 29.0 percent for Whites, and 32.9 percent for Blacks (see Table 30, in which data are age-adjusted to the 1987 population).

Final data for 1965, 1976, 1983, and 1987, showing racial comparisons of smoking behavior, are presented in Table 31. They generally show a higher smoking prevalence among Blacks. Smoking prevalence has been consistently higher among Black men than among White men (40 percent and 31 percent, respectively in 1987). Blacks also show a higher rate of ever smoking (as indicated by the sum of proportions for current and former smokers, Table 31). However, when smokers of both races are compared, we find that

Blacks have tended to smoke less heavily than Whites (Table 30).

More specifically, smoking prevalence among Whites fell steadily between 1965 and 1987 (40 percent to 28.8 percent, respectively, Table 31). Among Blacks, the prevalence of smoking remained substantially the same from 1965 to 1974 and then began to decline at a similar rate to that of Whites during the same period. Although the rate of decline in smoking over the years was similar in both races, when the data was disaggregated by sex, Black males had the highest rate of decline, an average annual decrease of 1.15 percent per year.

Progress in eliminating the smoking habit, however, has been limited for some groups of Hispanics, according to data from the 1982-84 Hispanic Health and Nutrition Examination Survey (HHANES). (43) HHANES is a national data set that specifically targeted the Hispanic population. Among other features, HHANES was collected using bilingual interviewers and the data were disaggregated into three Hispanic subgroups: Mexican Americans, Puerto Ricans, and Cuban Americans. (44) Household surveys in general have reported a relatively low smoking prevalence among Hispanics in the United States in comparison to Whites and Blacks. It is difficult to make generalizations about the Hispanic population because of the small sample of Hispanics surveyed.

Table 32 compares smoking prevalence among the three Hispanic groups in the HHANES (1982-1984) with Whites and Blacks from

the NHIS (1985). For men aged 25 to 44, the smoking rates for Whites were generally lower than for Blacks and all three Hispanic subgroups. For most sex-age groupings, Black smoking prevalence is slightly higher than total Hispanic prevalence. Exceptions are noted among Cuban American men 25 to 34 years of age who had a particularly high smoking prevalence rate of 57.7 percent (Table 32). Among Hispanic women aged 25 to 54, Puerto Rican women have the highest smoking rates. Rates of smoking were markedly lower in the oldest age groups in all three Hispanic populations. Table 33 examines the number of cigarettes smoked daily by different segments of the Hispanic population. In general, Mexican Americans had a much lighter smoking pattern than the Puerto Ricans and Cuban Americans. The percentage of Puerto Rican and Cuban smokers of both sexes who consumed 20+ cigarettes a day was almost two times that of the White population cited in NHIS. (44)

In 1965, 29.6 percent of all adults who had ever smoked cigarettes had quit. This proportion, i.e., the quit ratio, increased to 44.8 percent in 1987. (40) The rate of increase in the quit ratio from 1965 to 1985 was similar for men and women. In recent years, the rate of change in the quit ratio for Whites and Blacks has been similar. Trends in cigarette initiation are measured by the prevalence of smoking among those aged 20 to 24 years. Using this measure, initiation has fallen four times as fast among men than among women. The rate of

decline among Whites and Blacks has been similar. Further disaggregation by sex has shown a sharper drop in initiation for Black men as compared to White men.

In summary, the trends in smoking initiation, prevalence, and quitting among Blacks and Whites show similar rates of change from 1974 to 1987. Thus, the disparity in smoking between Whites and Blacks has neither widened nor narrowed appreciably. The prevalence of smoking among Blacks is still higher than among Whites and this contributes to a disproportionate share of illness in the Black community. There is additional cause for concern due to new policies of the cigarette manufacturers which heavily target and market minority neighborhoods. (45, 46)

1.1 Cigarette Smoking and Socioeconomic Status

According to one analysis, the race disparity in 1985 smoking rates is largely due to differences in other socioeconomic and demographic variables that appear to be related to smoking initiation. (47) When employment status, marital status, education, and poverty status were controlled, the race difference in smoking initiation no longer pertained. However, in smoking cessation, the other main factor in smoking rates, Black Americans were found to be less likely to do so, regardless of sociodemographic status. (47) Epidemiologic studies of smoking-related illness have shown an inverse relationship between socioeconomic status and both disease incidence and mortality. Differences in cancer survival, for instance, are largely attributable to socioeconomic

or environmental factors rather than race. (48)

Table 34, based on the 1985 NHIS, reports the 1985 smoking prevalence among U.S. persons 18 years of age and over by race, marital status, education, and income. Data from this survey indicated that income is strongly associated with smoking among men. For example, men aged 30 to 44 with family incomes of \$10,000 or less were more than twice as likely to be smokers as those with family incomes of \$50,000 or above. Table 35 indicates that even with a much closer income differential, Mexican American and Puerto Rican men with an income of \$10,000 or less were significantly more likely to smoke than those with an income of \$10,000 or more. Among women, the trends by family income are not as strong.

Smoking appears to be most associated with educational level. According to Pierce et al., who analyzed the NHIS data by educational status,

"National trends in smoking prevalence by educational category from 1974 through 1985 show that education has replaced gender as the major sociodemographic predictor of smoking status." (49)

By 1985, only 18.4 percent of college graduates smoked; however, people who did not complete high school were nearly twice as likely to be smokers (Table 34). A difference of this magnitude or greater held across all age groups of men. Among women, only those 45 and over failed to show a

comparably strong association.

Pierce et al.'s examination of time trends revealed that the percentage of smokers has decreased for all educational groups since 1974, however

"the decline has occurred five times faster among the higher educated compared with the less educated."

(49)

For women with only a high school diploma or less, the proportion starting to smoke (as measured by smoking prevalence among 20- to 24-year-olds) actually increased about a half a percentage point per year between 1974 and 1985. Women who had attended college did not appear to change their smoking initiation rate. This helps to explain the flat trend in smoking initiation noted above for Black and White women. (49)

Examining the smoking behavior of high school students is especially instructive because all have similar educational backgrounds. Thus, behavior differences can be more easily observed. Smoking one or more cigarettes daily for the past thirty days was more than twice as frequent among the non-college bound students (29.0 percent) as among the college bound (13.3 percent) in 1987, according to the National Institute on Drug Abuse's 1987 survey of high school seniors and young adults. (50) Nearly one in five (19.5 percent) of the non-college bound smoked one-half pack or more, compared to about one in fourteen (7.2 percent) among the college bound. (50) These differentials were similar to those found in 1986. (8)

To improve health through smoking control, one of the national health objectives stipulates that by 1990 the

proportion of adults who smoke should be reduced to below 25 percent. As of 1985, certain disadvantaged subgroups—namely, people of low income (less than \$10,000) and low educational attainment (noncompletion of high school)—were far from that goal. Only the college educated and those with the highest incomes (\$50,000 or more) appeared to have reached this goal, whether male or female, young or old. Approximately one-third of those with incomes between \$10,000 to \$19,999 (33.2 percent) and less than \$10,000 (32.4 percent) were current smokers, compared with 23.5 percent of those with incomes of \$50,000 or more. The difference is even more striking by educational attainment: 35.4 percent of those with less than a high school education were current smokers, compared with 18.4 percent of those with 16 or more years of education (Table 34).

2. *Alcohol Consumption and Illicit Drug Use*

Alcohol consumption is related to numerous health problems, particularly unintentional injuries and liver cirrhosis, which are among the ten leading causes of death. Drinking patterns differ according to sex, ethnicity, and some indicators of social and cultural background, as evidenced by findings from different types of data sources, such as household surveys, cause-specific mortality statistics, and treatment populations. The abuse of illicit drugs is an important public health and social problem. Marijuana, by far the most frequently used illicit drug, exposes the smoker to more tar than high-

tar cigarettes, and several studies have found that marijuana use during pregnancy may increase the risk of congenital malformations and low birthweight babies. (51) Cocaine use presents the risk of fatal overdose in some individuals and of profound dependency in most, with resulting adverse consequences for functioning in many life areas. (51) Further, users of drugs (including alcohol) expose themselves and others to particular hazards when they attempt to drive motor vehicles or operate machinery when under the influence of drugs. Epidemiologic and other data relating to abuse of alcohol and other drugs by minorities and low income populations is discussed in detail in Chapter IX, Mental Health.

3. *Nutritional Patterns*

Evidence in several nutritional areas may indicate that shortcomings in diet and nutrition, with consequent detrimental effects on health status, affect some disadvantaged groups disproportionately. Some of the analysis discussed below is limited in scope and vulnerable to some methodological criticism, (52) so it should not be taken as conclusive.

However, there is no doubt that the problem of overweight affects several disadvantaged groups disproportionately. The 1985 NHIS findings on overweight were based on self-reported weight and height. To establish overweight, the reported values were compared against "desirable body weight" determined from 1983 Metropolitan Life Insurance Company standards.

Overall, about one-fourth of the U.S. adult population is

overweight, when overweight is defined as 20 percent or more above desirable body weight for height. (14)

According to the NCHS, "marked racial differences in prevalence of overweight were noted for women: 36 percent of Black women compared with 21 percent of White women were significantly overweight; 55 percent of middle-aged Black women were significantly overweight compared with 28 percent of White women in the same age range." (14)

After adjusting for racial/ethnic differences in age and poverty status, Dawson, in her analysis of the 1985 NHIS data, found that one-third of Black women, one-quarter of Hispanic women, and one-fifth of non-Hispanic White women were found to be overweight. (7) Further analysis of the survey results, which included data on self-perceived overweight and on attempts to lose weight, suggested that "Black women are as likely as White women to attempt weight loss when they perceive themselves to be overweight." (7)

However, Black women are less likely than non-Hispanic White women to perceive themselves as overweight, regardless of their actual relative weight. Dawson suggested that Black women may not evaluate their weight status in terms of national norms, using instead weight levels in their own racial group. This explanation was supported by her results showing that the difference in self-perception between Black and non-Hispanic White women decreased when the women evaluated their weight

relative to their own racial group. In other words, once the specific norms against which women evaluated their weight were identified, Black women were no less likely than White women to consider themselves overweight.

Overweight appears, from the 1985 NHIS data, to vary little by Hispanic origin (Table 36). However, as noted above, Dawson found Hispanic women were more often overweight than Whites after adjusting for age and poverty status. Overweight is a particularly widespread problem among Mexican Americans. A series of studies in three of the five Southwestern states, where Mexican Americans predominate among the Hispanic population, has found a higher prevalence of overweight among Mexican Americans than non-Hispanic Whites. (53)

Other results from the 1985 NHIS show that, except among the oldest age group, men are a little more likely to be overweight than women (see Table 36), despite considerable data from other data sets suggesting, if anything, a reverse effect for gender. (54) Excess weight is inversely related to educational attainment, and, among females, to family income (see Table 36).

One nutrition-related national health objective is:

"By 1990, the prevalence of significant overweight (120 percent of "desired" weight) among the U.S. adult population should be decreased to 10 percent of men and 17 percent of women, without nutritional impairment." (1)

As measured by the 1985 NHIS, few groups have reached that goal so far, and disadvantaged educational,

income, and racial groups tend to have further to go to achieve it.

Regarding nutrition trends in relation to heart disease, there is considerable agreement among health authorities that much of the two-decades-long decline in death rates from heart disease can probably be attributed to changes in diet and smoking. (55) However, evidence exists that nutritional risk factor changes have not occurred among all subgroups of the population in the same way. The most current national dietary and nutrition information dealing with sociodemographic differences comes from NHANES II, conducted between 1976 and 1980. Two recent analyses of that data dealing with nutritional risk factors for heart disease suggested that Black Americans consume fewer calories and less fats than Whites, but more cholesterol. (56) In addition, mean serum cholesterol decreased significantly among most Whites (the exception was White men with eight years or less education) but not Blacks during the period 1960-62 to 1976-80. (57)

The cancer control objectives with respect to diet are twofold: (42) reduction of the level of fat in the diet to 30 percent of the total calories consumed or less, and an increased consumption of dietary fiber to 20-30 grams daily. Table 37 indicates that none of the various racial/ethnic groups have come close to these goals according to the NHIS. Furthermore, the percentage of calories obtained from fat is similar in all age-sex groups of Blacks and Whites.

(This is in contradiction to the NHANES II results mentioned earlier which suggested that Blacks consume fewer calories and less fat than Whites.) Hispanics appear to consume a lower percentage of calories from fat than the other ethnic groups. With regard to fiber intake (Table 37), men and young people consume more grams per day than women and older people, respectively. This is a reflection of the greater food intake of the former groups. It is women and older people who consume more fiber per 1,000 kcal than their counterparts. Black and White fiber intake patterns are similar, while Hispanics consume both more grams of fiber per day and a larger portion of fiber per kcal (Table 37).

The consumption of healthful foods is linked with a person's belief in the relationship between diet and health. (42) Within each age group, respondents who believed in the relationship between diet and cancer were more likely to eat more fiber, more fruits and vegetables, and less fat. (42) Thus the results in Table 38 are noteworthy and indicate that Blacks at all educational levels are less likely to be aware of (or to believe in) the relationship between diet and disease. Despite this, the data shown in Table 37 do not indicate that Blacks are more likely than Whites to eat less healthful foods.

Finally, although the evidence is not conclusive regarding whether nutrients are preventive factors for cancer, (58) vitamin and mineral supplements provide substantial additional amounts of nutrients. Whites are much more likely to have consumed dietary supplements anytime in the past year as well as on a daily basis when compared to Blacks (Table 39). Women

of both races are more likely than their male counterparts to augment their diet with supplements.

Childhood nutrition patterns also vary by race. With respect to childhood obesity, data from four national surveys (59) indicate pronounced increases in the prevalence of pediatric obesity in the U.S. (Each survey examined a time period of roughly 14 years.) Obese children are at greater risk for hypertension, psychosocial dysfunction, respiratory disease, diabetes, and several orthopedic conditions. (59) In addition, adults who were obese as children constitute a majority of the heaviest adults. (60) Adolescents in the surveys were grouped in two age categories: 6- to 11-year-olds and 12- to 17-year-olds. In both cases, obesity was less prevalent among Black children than among White children. Since the early 1960s, obesity among Black boys has remained substantially less prevalent than among White boys, while the prevalence of obesity among Black girls is now apparently quite similar to that of White girls.

In the area of child nutrition, another analysis combined data from NHANES II with Hispanic HANES (1982-84). (52) It showed that mean serum vitamin A levels of Mexican-American and Black children ages 4 to 5 and Mexican-American children ages 6 to 11 were significantly lower than those of their White counterparts. Further analysis by poverty status and use of vitamin supplementation suggested that these differences are not genetic. (52)

In preventing childhood lead poisoning, there is broad consensus that primary prevention is the optimal approach. Elevated blood lead levels can be readily detected by simple and inexpensive screening techniques. However, the Committee on Environmental Hazards has concluded that screening is sporadic and in some areas not available. (61) Lead-based paint in housing remains the most common high-dose source of lead for preschool children. Elevated lead blood levels in asymptomatic children are associated with a reduction in intelligence, alteration in behavior, shorter stature, and decreased weight. (61) Since the loss of neurologic and intellectual functioning is largely irreversible, prevention is clearly the preferred intervention strategy. The elimination of lead in gasoline as a source of poisoning is not addressed in the literature on health status of minority and low income groups.

In the NHANES II data, (61) there was wide disparity in the prevalence of elevated blood lead levels between Black children and White children (12 percent to 2 percent, respectively), irrespective of social class or place of residence. Prevalence of rates for elevated blood levels were highest among families in densely populated urban areas and in those with incomes of less than \$15,000 per year. Since the sociodemographic risk factors for lead toxicity are the same as those for iron deficiency, (62) the two conditions often coexist. This underscores the importance of screening for and treating concomitant iron deficiency anemia in children with elevated lead levels.

F. Access to Clinical Preventive Services

The role of public education in promoting personal health preventive practices is of vital importance. The *Report of the Secretary's Task Force on Black and Minority Health* (63) revealed that all of the six leading causes of death for minorities—cardiovascular and cerebrovascular diseases; cancer; chemical dependency; diabetes; homicide, suicide, and unintentional injuries; and infant mortality and low birthweight—have preventable risk factors. The Task Force conducted a statistical analysis to determine the number of deaths among minorities that would not have occurred had mortality rates for minorities equaled those of nonminorities. The six specific causes of death mentioned above accounted for more than 80 percent of the higher annual proportion of minority deaths. (63) (Each of these health areas is discussed in greater detail in other chapters of this report: Chronic and Acute Disease Conditions (Chapter V) discusses cardiovascular and cerebrovascular diseases, cancer, and diabetes; Mental Health (Chapter IX) discusses chemical dependency; Injuries (Chapter VI) discusses homicide, suicide, and unintentional injuries; and Reproductive Health (Chapter IV) discusses infant mortality and low birthweight.)

Smoking, alcohol abuse, poor dietary habits, and stress are among the most salient preventable risk factors associated with the leading causes of death for minorities. It is believed that through proper health education about these

lifestyle issues as well as adherence to medical regimens and appropriate availability and use of preventive services, the number of excess deaths among minorities can be substantially reduced. The success of a health education program depends largely on its ability to encourage active participation by the community. In addition, health education programs require an understanding and respect of the relationship between the environment, lifestyle, and improvement in the quality of health. (63)

Notwithstanding the important role of public education in promoting personal preventive health practices, the nature of a person's contact with the health care system is probably the strongest factor affecting behavior in this area, particularly as regards medical services such as screening. It is fundamental that, to receive health screening services, there must be contact with the health care system. Data presented in Chapter XI, Utilization of Health Services, shows that certain disadvantaged groups are less likely to see a physician or other health care provider. This means a reduction in opportunities to recommend or prescribe screening procedures.

Blacks, on average, are in poorer health than Whites; Black Americans have a one-and-a-half times higher death rate than Whites of the same age, and the Black infant mortality rate is twice that of Whites. (63) (64) The racial disparity in health makes the issue of minority access to care especially important. A 1986 national telephone survey by Blendon, Aiken et al. found a significant deficit in access to care among Blacks as compared to

Whites. (65) Each respondent was interviewed about various aspects of access to medical care. First, Blacks had a significantly higher rate than Whites of not seeing a physician within the past year. Second, the average number of physician visits among Blacks compared to Whites was consistently lower (3.4 compared with 4.4 per year, respectively). Third, the proportion of Blacks hospitalized one or more times during the year was also lower than that of Whites. Significantly, even when health status was accounted for, there were more Blacks than Whites who had not seen a physician in the past year. (65) Although the difficult economic circumstances of many Black families clearly contribute to the lack of access to medical care, even Blacks above the poverty line have less access than their White counterparts. (65) In light of the poorer health status of Blacks in general, the differences in the use of health services are magnified in importance.

Other studies also suggest a pattern of lower use of preventive services among minorities. For instance, while close to 80 percent of White women receive prenatal care during the first trimester of pregnancy, only 62 percent of Black women receive early prenatal care. (66) The lower number of physician visits for minority children is reflected in lower vaccination rates. (66) Dental services are used less frequently by minority populations. (10) In their study on trends in the use of preventive health care by women, Makuc et al. suggested that

“... among middle-aged women a substantial part

of the poverty differential in screening is also accounted for by women without a recent physician contact. The relatively high proportion of middle-aged poor women without a recent physician contact (17 percent) may reflect a lack of health programs available to poor women in this age group.” (11)

Indications that disadvantaged groups do not always receive treatment of equal quality by health care providers can be found in research cited earlier in this chapter. More direct documentation of the disparity in the quality of care comes from a recently published study of physicians with differing clienteles in New York City. (67) Physicians with 50 percent or more Black and Hispanic patients were less likely to follow nationally recognized guidelines for health promotion and disease prevention than physicians with mostly White patients. For example, physicians were one-third as likely to recommend screening mammography to Blacks or Hispanic patients than to Whites. The proportion recommending influenza vaccine for older patients was 48 percent among the physicians with primarily Black and Hispanic patients, and 74 percent among physicians treating predominately Whites. In the CDC Behavioral Risk Factor Surveillance data on immunization in two Georgia counties, an association between influenza vaccination and physician recommendation held for both races. (68) These studies clearly demonstrate that recommendations for vaccinations from health-care providers markedly influence the decision to be vaccinated.

It is also true, however, that physician behavior is affected by patient expectations. The strong association found in some preventive practice indicators between education and/or income and using services or engaging in preventive behavior suggests that practitioner actions are indirectly affected by the broader forces of environmental, cultural, and sociological factors promoting differential preventive care and behavior. Public policies to encourage preventive behavior among the diverse groups within the U.S. population are still at an early stage of development. (47)

Further improvements in access to preventive care services may come only at the cost of much greater effort than has been expended to achieve recent gains. The 1990 Health Objectives for the Nation: A Midcourse Review, discusses the barriers to access to early prenatal care. The following comments illustrate the complexity of that issue, and are applicable in many respects to other preventive practice problems.

"Barriers to access to early prenatal care are: the high costs for delivery and prenatal care; lack of maternity care providers; inadequate transportation and child care services; poorly located sites for delivery of care; and the systemic inadequacy in recruiting hard-to-reach women. Other factors that have been reported as responsible for women's failure to obtain early prenatal care are: lack of information about the importance of early care; dissatisfaction with hospitals and health care providers; reduced funding

levels for federal programs; regional pockets of unemployment, which increased the number of indigent pregnancies; and the

number of physicians discontinuing obstetrics practice because of the prohibitive cost for medical liability insurance." (2)
In addition, lack of insurance

coverage and availability of providers who accept Medicaid reimbursements pose barriers to preventive care for disadvantaged groups.

Table 1

Number and percent of office visits in which general medical examination was patient's primary reason for visit, and median number of diagnostic services per visit, by patient's race and ethnicity, 1985

	Office visits for a general medical examination			
	Race*		Ethnicity*	
	White	Black and other non-white races	Non-Hispanic	Hispanic
Number	27,730,449	3,090,515	29,532,939	1,288,025
Percent	4.8	4.8	5.0	3.2
Median number of diagnostic services	3	3	3	3

* Race and ethnicity are not mutually exclusive classifications.

Source: National Center for Health Statistics, unpublished data from the National Ambulatory Medical Care Survey, 1985. Ethnic classification of the patient was based on the physician's knowledge or judgment.

Table 2

Percent of office visits in which general medical examination was patient's primary reason for visit, by diagnostic service, patient's race and ethnicity, United States, 1985

Diagnostic service	Race*		Ethnicity*	
	White	Black and other races	Non-Hispanic	Hispanic
None	10.2	7.9	9.7	14.7
Breast exam	32.5	29.2	31.9	38.9
Pelvic exam	30.8	32.4	30.5	41.2
Rectal exam	23.3	21.7	23.5	16.8
Visual acuity	8.9	12.5	9.3	7.2
Urinalysis	41.0	47.7	42.4	25.5
Hematology	28.7	31.3	29.7	12.3
Blood Chemistry	19.8	18.7	20.3	6.1
Pap test	27.9	23.6	26.8	41.5
Other lab test	13.2	17.1	13.3	19.6
Blood pressure check	74.6	73.1	74.6	72.8
EKG	12.8	11.7	12.8	9.7
Chest X-ray	8.3	9.7	8.6	3.9
Other radiol.	4.9	2.6	4.6	5.1
Other	9.3	10.0	9.2	12.3

* Race and ethnicity are not mutually exclusive classifications.

Source: National Center for Health Statistics, unpublished data from the National Ambulatory Medical Care Survey, 1985. Ethnic classification of the patient was based on the physician's knowledge or judgment.

Table 3

Pap Smears*—Percentage of females who never had procedure vs. females who had procedure, by race and age, 1987

Race/Age	Never had procedure (%)		Had procedure (%)			
	Never heard of	Heard of but never had	For health problem	For screening purposes		
				< = 1 yr ago	> 1-3 yrs ago	> 3 yrs ago
All Races**	4.0	7.3	7.8	48.0	17.0	15.8
White (Non-Hispanic)**	2.1	6.9	7.6	47.9	17.8	17.7
18-29	2.6	11.3	10.1	59.4	13.8	2.9
30-39	0.6	2.0	9.6	55.5	20.5	11.7
40-49	2.0	2.3	7.1	49.3	18.5	20.9
50-59	0.6	3.6	6.9	43.7	21.4	23.9
60-69	1.7	6.0	5.2	38.0	18.4	30.6
70+	5.9	16.7	3.2	25.6	16.1	32.5
Black (Non-Hispanic)**	4.1	7.8	10.6	52.8	15.4	9.2
18-29	3.4	8.4	14.0	62.5	8.8	2.9
30-39	1.4	2.5	11.7	59.6	19.5	5.3
40-49	0.5	2.2	10.9	59.9	18.3	8.2
50-59	4.5	6.2	7.5	41.4	21.4	18.9
60-69	5.1	16.8	7.0	38.2	15.9	17.0
70+	19.7	23.7	3.2	17.2	13.7	22.6
Hispanic**	15.1	9.6	7.4	44.8	12.9	10.3
18-29	16.0	14.5	9.8	48.4	8.9	2.3
30-39	10.0	3.4	6.9	53.2	16.7	9.8
40-49	10.3	3.3	9.3	46.9	19.2	10.9
50-59	19.7	10.7	4.3	38.4	10.9	16.0
60-69	19.4	9.9	1.5	26.9	15.0	27.3
70+	26.8	16.2	1.8	19.9	8.0	27.4

* Estimates are weighted to reflect U.S. Census population estimates for 1987.

** Females ages 18 or older.

Note: Data based on household interviews of the civilian noninstitutionalized population.

Source: Department of Health and Human Services, "Cancer Statistics Review, 1973-1986," National Institutes of Health Pub. No. 89-2789 May 1989, Table II-24, p. II.51.

Table 4

Percent of women 18 years and over who had had a pap smear and percent who had had a breast examination, by a health professional in the past year, by age and selected characteristics: United States, 1985

Characteristic	Pap smear					Breast examination				
	Total	18-29 years	30-44 years	45-64 years	65 years and over	Total	18-29 years	30-44 years	45-64 years	65 years and over
All women ¹	45.6	60.1	50.5	37.7	25.3	50.3	60.2	52.1	45.2	39.0
Education level										
Less than 12 years	34.9	55.9	41.3	32.8	21.6	41.7	55.0	42.8	40.3	34.9
12 years	45.8	60.4	47.9	36.7	25.8	50.0	59.6	49.8	44.7	39.9
More than 12 years	53.2	61.4	56.1	44.7	33.5	57.0	63.2	57.6	51.5	47.3
13-15 years	50.8	58.6	51.9	42.9	35.4	54.6	60.9	53.1	48.7	48.8
16 years or more	56.4	66.6	60.1	47.0	30.5	60.3	67.6	61.8	54.9	44.9
Family income										
Less than \$10,000	37.4	57.8	41.2	31.5	20.8	43.4	57.4	42.8	38.2	34.4
\$10,000-\$19,999	42.9	60.8	45.7	30.6	25.6	47.7	59.8	47.6	37.5	40.6
\$20,000-\$34,999	48.9	63.4	50.5	38.0	26.4	53.1	64.2	51.6	46.4	42.2
\$35,000-\$49,999	51.7	62.6	54.5	40.4	39.1	54.4	62.4	56.2	46.1	47.1
\$50,000 or more	52.6	52.4	55.6	49.6	47.2	60.0	59.1	59.0	60.9	65.0
Race										
White	44.7	59.4	49.6	37.5	25.3	49.5	59.6	51.2	45.0	38.6
Black	52.9	67.7	56.7	40.2	25.8	57.0	67.1	58.9	47.3	43.1
Hispanic origin										
Hispanic	47.1	55.6	50.3	34.5	24.9	49.5	55.0	49.2	46.4	32.3
Non-Hispanic	45.6	60.6	50.5	37.9	25.4	50.4	60.7	52.4	45.2	39.1
Geographic region										
Northeast	45.1	57.8	52.3	38.3	25.1	51.9	59.9	54.6	48.3	41.9
Midwest	44.9	60.5	51.1	35.9	22.5	49.0	58.6	52.8	42.8	36.6
South	46.4	62.5	50.1	37.6	26.0	50.8	62.7	52.3	44.4	38.5
West	45.9	57.7	48.2	39.9	28.8	49.4	58.5	48.1	46.5	39.4
Marital status										
Currently married	48.7	68.0	50.7	39.1	28.7	52.7	67.2	52.5	46.2	42.0
Formerly married	35.9	68.9	49.6	35.0	23.1	44.2	66.9	50.7	43.5	37.0
Never married	46.5	49.2	50.4	27.5	22.4	49.2	50.9	52.0	34.9	36.6
Employment status										
Currently employed	51.0	61.6	51.3	39.8	26.2	53.9	62.0	53.3	46.5	36.3
Unemployed	49.9	56.7	45.4	37.3	*48.1	51.2	55.9	47.5	42.3	*60.8
Not in labor force	38.8	57.7	49.1	35.2	25.1	46.0	57.5	50.0	43.8	39.1

¹ Includes women with unknown sociodemographic characteristics.

Note: Denominator for each cell excludes unknowns. Data based on household interviews of the civilian noninstitutionalized population.

* Relative standard error greater than 30%.

Source: National Center for Health Statistics, C.A. Schoenborn. 1988. Health promotion and disease prevention: United States, 1985. Vital and Health Statistics, Series 10, No. 163. DHHS Pub. No. (PHS)88-1591. Washington, U.S. Government Printing Office, Table 6, p. 23.

Table 5

Breast Exam*—Percentage of females who never had procedure vs. females who had procedure, by race and age, 1987

Race/Age	Females					
	Never had procedure (%)		Had procedure (%)			
	Never heard of	Heard of but never had	For health problem	For screening purposes		
				1 yr ago	1–3 yrs ago	>3 yrs ago
All Races * *	9.4	10.1	7.2	43.6	15.1	14.6
White (Non-Hispanic) * *	7.9	9.1	7.8	43.5	15.8	15.8
40–49	5.6	5.4	11.0	47.5	15.3	15.2
50–59	5.1	6.2	8.6	46.5	19.6	14.0
60–69	7.6	11.0	6.3	42.8	14.9	17.4
70+	13.9	14.8	4.7	36.4	13.7	16.6
Black (Non-Hispanic) * *	15.5	12.7	5.0	45.9	12.0	8.9
40–49	8.9	11.2	5.7	53.5	15.0	5.6
50–59	15.0	7.7	6.1	46.5	12.5	12.3
60–69	14.6	14.9	4.5	46.4	10.4	9.2
70+	30.2	20.6	2.4	29.4	7.4	10.1
Hispanic * *	13.4	14.7	4.0	45.0	11.7	11.2
40–49	12.5	9.6	4.8	52.1	12.9	8.2
50–59	8.5	20.4	5.4	50.8	8.3	6.5
60–69	14.4	12.3	1.5	36.4	13.9	21.5
70+	25.7	21.0	2.2	24.6	12.2	14.3

* Estimates are weighted to reflect U.S. Census population estimates for 1987.

** Females ages 40 or older.

Note: Data based on household interviews of the civilian noninstitutionalized population.

Source: Department of Health and Human Services, "Cancer Statistics Review 1973-1986," National Institutes of Health Pub. No. 89-2789 May 1989, Table II-25, p. II.52.

Table 6

Percent of women 18 years of age and over who knew how to do breast self-examination (BSE) and percent of those who knew how to do BSE who did the procedure at least 12 times a year, by age, and selected characteristics: United States, 1985

Characteristic	Knew breast self-examination					Did breast self-examination				
	Total	18-29 years	30-44 years	45-64 years	65 years and over	Total	18-29 years	30-44 years	45-64 years	65 years and over
All women ¹	87.0	86.0	91.6	89.1	77.7	37.3	31.3	38.1	41.8	38.8
Education level										
Less than 12 years	76.4	77.2	80.8	80.8	70.0	39.4	31.4	38.7	45.5	38.4
12 years	89.5	86.1	92.3	91.7	85.9	36.0	28.7	38.2	40.1	39.3
More than 12 years	91.8	89.7	94.5	93.6	84.9	37.5	34.3	37.7	41.3	39.2
13-15 years	90.1	87.3	93.6	92.4	84.7	36.7	33.9	37.1	40.4	37.7
16 years or more	94.1	94.3	95.4	95.1	85.1	38.5	35.1	38.2	42.4	41.4
Family income										
Less than \$10,000	77.8	82.0	84.0	78.6	71.2	39.7	31.0	40.7	48.2	42.8
\$10,000-\$19,999	87.6	87.9	88.5	88.1	85.7	36.7	30.9	37.9	42.4	38.2
\$20,000-\$34,999	90.6	88.1	93.7	91.7	84.1	34.6	31.1	35.5	36.8	36.8
\$35,000-\$49,999	92.5	88.6	95.0	94.3	83.8	38.9	32.4	41.1	41.5	37.1
\$50,000 or more	92.3	84.9	93.8	95.2	88.3	40.9	37.1	37.2	47.6	42.3
Race										
White	87.9	86.6	92.5	90.1	79.6	36.2	30.3	37.2	39.9	37.8
Black	83.6	87.0	90.6	83.0	60.1	46.4	37.5	45.0	59.4	52.8
Hispanic origin										
Hispanic	75.4	76.0	79.5	75.3	54.7	35.7	30.8	38.5	36.0	50.7
Non-Hispanic	87.7	86.9	92.5	89.8	78.5	37.3	31.4	38.0	41.9	38.5
Geographic region										
Northeast	85.1	82.8	90.4	87.4	77.2	36.7	29.8	39.7	41.2	35.0
Midwest	89.5	88.6	94.2	91.5	80.4	35.5	28.3	36.6	40.4	38.2
South	85.7	86.5	91.3	86.6	73.8	39.6	34.4	40.1	43.4	42.0
West	88.1	85.1	90.1	92.0	82.9	36.3	32.0	34.5	41.7	38.9
Marital status										
Currently married	90.2	90.6	91.9	90.7	82.8	38.5	33.1	38.4	41.9	40.9
Formerly married	82.2	88.7	92.3	85.1	74.5	37.7	27.4	36.8	42.7	37.0
Never married	80.8	80.1	86.6	83.1	73.7	31.4	29.6	36.9	33.8	38.8
Employment status										
Currently employed	90.3	87.8	92.6	91.2	81.2	36.6	31.1	37.7	42.1	37.3
Unemployed	88.7	87.2	89.9	90.2	* 93.7	36.3	31.6	40.9	42.4	* 27.9
Not in labor force	82.8	82.0	89.2	86.5	77.3	38.2	31.9	38.7	41.4	39.0

¹ Includes women with unknown sociodemographic characteristics.

Note: Data are based on household interviews of the civilian noninstitutionalized population.

* Relative standard error greater than 30%.

Source: National Center for Health Statistics, C.A. Schoenborn. 1988. Health promotion and disease prevention: United States, 1985. Vital and Health Statistics. Series 10, No. 163. DHHS Pub. No. (PHS) 88-1591. Washington, U.S. Government Printing Office, Table 7, p. 24.

Table 7

Mammography*—Percentage of females who never had procedure vs. females who had procedure, by race and age, 1987

Race/Age	Females					
	Never had procedure (%)		Had procedure (%)			
	Never heard of	Heard of but never had	For health problems	For screening purposes		
				<= 1 year ago	> 1-3 yrs ago	> 3 yrs ago
All Races **	15.6	47.5	6.6	16.6	6.4	7.3
White (Non-Hispanic) **	12.2	48.9	7.0	17.4	6.9	7.6
40-49	8.3	49.4	9.8	18.4	7.2	6.9
50-59	6.9	46.8	8.0	20.8	7.4	10.0
60-69	10.3	51.1	5.7	17.7	7.5	7.6
70+	23.7	48.1	4.1	12.8	5.3	5.9
Black (Non-Hispanic) **	29.4	40.9	5.6	14.2	3.9	5.9
40-49	18.1	45.9	10.7	12.4	4.5	8.3
50-59	25.4	44.5	2.9	18.6	4.3	4.4
60-69	35.3	36.4	4.5	17.1	3.3	3.5
70+	52.0	30.4	0.4	8.2	3.0	6.0
Hispanic **	31.6	42.2	3.1	12.9	3.1	7.1
40-49	24.2	52.3	3.2	11.6	1.8	6.9
50-59	30.1	32.9	4.2	17.5	7.0	8.3
60-69	30.3	45.2	3.2	10.4	2.1	8.7
70+	57.6	29.1	0.0	10.5	2.1	2.8

*Estimates are weighted to reflect U.S. Census population estimates for 1987.

** Females ages 40 or older.

Note: Data based on household interviews of the civilian noninstitutionalized population.

Source: Department of Health and Human Services, "Cancer Statistics Review 1973-1986," National Institutes of Health Pub. No. 89-2789 May 1989, Table II-26, p. II.53.

Table 8

Digital Rectal Exam*—Percentage of males who never had procedure vs. males who had procedure, by race and age, 1987

Race/Age	Never had procedure (%)		Had procedure (%)			
	Never heard of	Heard of but never had	For health problems	For screening purposes		
				<= 1 year ago	> 1-3 yrs ago	> 3 yrs ago
All Races**	22.8	19.1	10.9	17.1	10.4	19.6
White (Non-Hispanic)**	20.2	19.0	11.0	18.1	11.3	20.4
40-49	19.1	26.6	8.0	11.9	13.0	21.4
50-59	23.6	18.3	9.7	17.9	10.1	20.4
60-69	15.8	13.7	15.9	22.2	12.5	19.9
70+	22.9	14.0	11.8	23.4	8.6	19.4
Black (Non-Hispanic)**	38.2	16.4	10.8	15.7	5.9	13.0
40-49	33.3	22.3	6.6	15.0	6.9	15.8
50-59	43.6	15.8	8.6	9.9	6.3	15.7
60-69	31.4	9.8	22.2	21.3	5.7	9.7
70+	49.7	14.1	7.5	18.0	3.1	7.6
Hispanic**	29.3	28.5	10.5	8.4	7.2	16.1
40-49	32.0	30.0	6.6	7.4	5.1	18.8
50-59	27.0	29.5	12.2	8.7	11.8	10.9
60-69	20.2	30.0	18.9	6.7	9.1	15.2
70+	40.1	17.3	7.4	13.8	9.1	21.3

*Estimates are weighted to reflect U.S. Census population estimates for 1987.

**Members of the referenced population ages 40 or older.

Note: Data based on household interviews of the civilian noninstitutionalized population.

Source: Department of Health and Human Services, "Cancer Statistics Review 1973-1986," National Institutes of Health Pub. No. 89-2789 May 1989, Table II-27, p. II.54.

Table 9

Digital Rectal Exam*—Percentage of females who never had procedure vs. females who had procedure, by race and age, 1987

Race/Age	Never had procedure (%)		Had procedure (%)			
	Never heard of	Heard of but never had	For health problem	For screening purposes		
				<= 1 yr ago	> 1-3 yrs ago	> 3 yrs ago
All Races **	20.1	23.0	7.0	23.6	9.4	16.9
White (Non-Hispanic) **	17.2	22.9	7.3	24.8	10.0	17.8
40-49	16.5	25.3	5.3	27.1	9.5	16.3
50-59	13.1	22.2	9.8	26.3	10.9	17.8
60-69	14.3	22.3	7.2	26.8	9.5	20.0
70+	25.0	21.3	7.2	18.6	10.2	17.6
Black (Non-Hispanic) **	31.4	20.6	6.7	21.9	5.8	13.6
40-49	26.2	21.3	6.9	27.4	4.2	14.0
50-59	30.1	19.2	4.2	19.8	7.9	18.8
60-69	27.7	21.8	11.1	23.2	7.0	9.1
70+	48.3	20.1	4.9	12.3	4.7	9.8
Hispanic **	31.5	28.5	5.3	15.1	6.9	12.7
40-49	32.1	32.3	5.1	13.4	5.5	11.6
50-59	32.5	30.8	3.5	20.3	3.9	9.1
60-69	23.5	23.0	7.5	12.3	11.5	22.2
70+	40.5	20.9	6.5	12.7	10.5	8.8

* Estimates are weighted to reflect U.S. Census population estimates for 1987.

** Members of the referenced population ages 40 or older.

Note: Data based on household interviews of the civilian noninstitutionalized population.

Source: Department of Health and Human Services, "Cancer Statistics Review 1973-1986," National Institutes of Health Pub. No. 89-2789 May 1989, Table II-27, p. II.55.

Table 10

Blood Stool Tests *—Percentage of males who never had procedure vs. males who had procedure, by race and age, 1987

Race/Age	Never had procedure (%)		Had procedure (%)			
	Never heard of	Heard of but never had	For health problem	For screening purposes		
				< 1 yr ago	<= 1-3 yrs ago	> 3 yrs ago
All Races **	19.1	44.8	5.9	11.6	7.3	11.4
White (Non-Hispanic)**	15.2	47.1	6.1	12.4	7.7	11.4
40-49	13.4	54.2	4.5	8.3	7.8	11.8
50-59	14.1	49.0	6.5	13.0	7.0	10.3
60-69	11.8	43.3	7.6	14.9	9.7	12.7
70+	23.7	37.7	6.2	15.4	6.1	10.9
Black (Non-Hispanic)**	38.3	34.3	5.6	6.6	5.6	9.7
40-49	31.5	47.1	3.0	5.3	4.8	8.3
50-59	44.0	28.7	3.8	4.7	5.4	13.5
60-69	35.0	27.2	11.4	9.8	7.2	9.6
70+	48.4	25.2	5.8	7.9	5.5	7.2
Hispanic**	39.7	33.4	4.9	6.6	3.0	12.4
40-49	39.1	36.7	5.6	4.6	4.1	9.9
50-59	30.9	29.2	7.1	13.1	3.0	16.8
60-69	42.8	39.0	2.7	2.2	2.4	10.9
70+	60.9	23.8	0.0	3.0	2.4	12.2

* Estimates are weighted to reflect U.S. Census population estimates for 1987.

** Members of the referenced population ages 40 or older.

Note: Data based on household interviews of the civilian noninstitutionalized population.

Source: Department of Health and Human Services, "Cancer Statistics Review 1973-1986," National Institutes of Health Pub. No. 89-2789 May 1989, Table II-28, p. II.56.

Table 11

Blood stool tests*—Percentage of females who never had procedure vs. females who had procedure, by race and age, 1987

Race/Age	Never had procedure (%)		Had procedure (%)			
	Never heard of	Heard of but never had	For health problem	For screening purposes		
				<= 1 yr ago	> 1-3 yrs ago	> 3 yrs ago
All Races **	15.0	48.7	6.1	14.6	6.0	9.6
White (Non-Hispanic)**	12.0	49.9	6.5	15.4	6.3	9.9
40-49	10.4	62.3	4.2	10.1	4.5	8.5
50-59	9.0	49.1	8.7	16.2	6.4	10.5
60-69	9.0	45.2	6.7	20.6	7.9	10.6
70+	20.0	40.4	6.7	16.0	6.7	10.2
Black (Non-Hispanic)**	24.4	44.4	4.7	12.5	4.8	9.1
40-49	17.5	54.5	3.6	12.1	2.8	9.5
50-59	24.2	37.0	4.6	16.3	4.7	13.3
60-69	21.4	44.8	9.0	11.4	8.6	4.8
70+	42.1	34.5	2.4	8.7	5.0	7.2
Hispanic**	33.7	39.9	4.5	9.4	5.2	7.4
40-49	34.8	42.5	4.0	8.9	6.4	3.3
50-59	32.5	37.4	4.1	10.6	4.2	11.3
60-69	27.8	41.4	4.5	11.0	3.6	11.7
70+	42.4	35.6	6.9	5.4	6.3	3.4

* Estimates are weighted to reflect U.S. Census population estimates for 1987.

** Members of the referenced population ages 40 or older.

Note: Data based on household interviews of the civilian noninstitutionalized population.

Source: Department of Health and Human Services, "Cancer Statistics Review 1973-1986," National Institutes of Health Pub. No. 89-2789 May 1989, Table II-28, p. II.57.

Table 12

Proctoscopy*—Percentage of males who never had procedure vs. males who had procedure, by race and age, 1987

Race/Age	Never had procedure (%)		Had procedure (%)			
	Never heard of	Heard of but never had	For health problem	For screening purposes		
				<= 1 yr ago	> 1-3 yrs ago	> 3 yrs ago
All Races **	35.2	42.4	5.5	3.2	3.1	10.7
White (Non-Hispanic)**	31.4	44.5	5.7	3.5	3.3	11.6
40-49	30.4	54.7	4.0	1.5	2.0	7.3
50-59	30.1	46.5	4.1	3.7	3.7	11.9
60-69	26.3	40.4	9.2	3.8	5.0	15.3
70+	40.9	30.3	6.6	5.8	2.8	13.5
Black (Non-Hispanic)**	56.6	29.5	3.8	2.1	3.1	4.8
40-49	49.4	38.4	1.7	3.0	3.8	3.7
50-59	59.6	30.9	2.7	0.4	1.8	4.7
60-69	54.0	26.4	7.5	3.8	2.4	5.9
70+	70.7	13.0	5.3	0.4	4.5	6.1
Hispanic **	51.1	35.0	5.5	0.8	1.3	6.3
40-49	53.5	34.4	5.1	0.0	1.2	5.8
50-59	50.7	30.6	6.9	2.0	1.5	8.3
60-69	44.6	43.3	7.6	1.0	1.5	3.4
70+	53.7	35.5	0.0	0.0	3.0	7.8

* Estimates are weighted to reflect U.S. Census population estimates for 1987.

** Members of the referenced population ages 40 or older.

Note: Data based on household interviews of the civilian noninstitutionalized population.

Source: Department of Health and Human Services, "Cancer Statistics Review 1973-1986," National Institutes of Health Pub. No. 89-2789 May 1989, Table II-29, p. II.58.

Table 13

Proctoscopy*—Percentage of females who never had procedure vs. females who had procedure, by race and age, 1987

Race/Age	Never had procedure (%)		Had procedure (%)			
	Never heard of	Heard of but never had	For health problem	For screening purposes		
				<= 1 yr ago	> 1-3 yrs ago	> 3 yrs ago
All Races**	32.5	47.4	4.8	2.5	2.2	10.7
White (Non-Hispanic)**	28.1	49.6	5.4	2.7	2.4	11.8
40-49	23.3	63.1	3.2	1.1	0.9	8.3
50-59	23.1	51.8	6.6	2.7	2.7	13.2
60-69	26.9	46.3	6.7	4.0	3.1	13.1
70+	40.0	34.5	5.4	3.6	3.1	13.3
Black (Non-Hispanic)**	50.4	38.4	2.2	1.7	1.6	5.7
40-49	45.5	44.7	2.2	1.9	0.5	5.3
50-59	44.5	41.0	2.8	0.7	1.5	9.5
60-69	50.9	36.5	2.3	2.8	4.0	3.5
70+	69.2	23.6	0.9	1.5	1.5	3.3
Hispanic**	55.6	33.8	1.9	0.8	1.2	6.8
40-49	53.6	39.3	0.5	16.7	2.2	4.5
50-59	53.7	34.0	3.8	1.1	1.0	6.4
60-69	55.3	31.0	1.4	2.2	1.0	10.1
70+	66.2	21.2	2.4	0.0	1.0	9.2

* Estimates are weighted to reflect U.S. Census population estimates for 1987.

** Members of the referenced population ages 40 or older.

Note: Data based on household interviews of the civilian noninstitutionalized population.

Source: Department of Health and Human Services, "Cancer Statistics Review 1973-1986," National Institutes of Health Pub. No. 89-2789 May 1989, Table II-29, p. II.59.

Table 14

Percent of persons 18 years of age and over who had had their blood pressure checked in the past year, by sex, age, and selected characteristics: United States, 1985

Characteristic	Both sexes 18 years and over	Male					Female				
		Total	18-29 years	30-44 years	45-64 years	65 years and over	Total	18-29 years	30-44 years	45-64 years	65 years and over
All persons ¹	84.9	80.7	74.7	79.4	84.3	89.5	88.6	90.6	86.6	86.9	91.4
Education level											
Less than 12 years	83.6	79.7	70.8	71.1	80.8	89.0	86.9	86.5	82.5	84.5	91.3
12 years	84.8	79.2	73.6	78.8	82.9	91.2	89.0	91.2	85.4	88.8	92.1
More than 12 years	85.9	82.6	77.3	81.9	88.3	88.8	89.4	91.4	89.1	86.2	90.5
13-15 years	85.2	81.5	77.3	81.6	86.8	88.9	88.6	90.5	88.7	83.6	91.2
16 years or more	86.6	83.6	77.4	82.0	89.2	88.6	90.4	93.1	89.5	89.4	89.3
Family income											
Less than \$10,000	83.8	76.1	75.5	66.1	74.2	84.9	88.4	90.7	81.7	86.0	90.9
\$10,000-\$19,999	82.9	77.9	70.4	74.6	80.9	90.0	87.0	90.0	81.4	84.3	92.2
\$20,000-\$34,999	84.5	80.6	75.0	79.6	84.0	92.5	88.6	91.4	87.5	86.6	89.5
\$35,000-\$49,999	87.1	84.6	79.3	84.7	86.6	92.0	89.6	91.0	89.1	87.8	95.4
\$50,000 or more	87.5	84.9	76.2	84.1	89.6	89.9	90.4	91.0	90.1	89.9	94.6
Race											
White	84.8	80.9	74.5	79.6	84.1	90.2	88.4	90.4	86.4	86.5	91.4
Black	87.1	81.9	79.3	79.6	87.9	82.9	91.2	93.6	90.0	89.9	90.4
Hispanic origin											
Hispanic	78.8	70.6	64.4	69.5	79.3	87.5	85.9	87.4	83.8	84.8	90.8
Non-Hispanic	85.3	81.3	75.5	80.0	84.5	89.6	88.8	90.8	86.8	87.0	91.3
Geographic region											
Northeast	86.4	83.3	78.4	81.5	86.6	89.8	89.1	89.8	88.5	88.3	90.0
Midwest	83.9	78.8	72.5	78.0	82.4	88.2	88.3	90.8	85.6	85.7	92.3
South	85.7	81.6	77.7	80.5	83.1	89.1	89.2	91.5	87.6	86.8	91.9
West	83.2	78.8	68.3	77.2	85.7	91.7	87.3	89.4	84.1	86.7	90.5
Marital status											
Currently married	85.5	82.7	73.0	80.8	85.6	90.7	88.1	91.5	86.4	86.7	90.3
Formerly married	86.7	78.5	71.6	75.6	79.0	84.8	89.8	90.9	87.1	87.8	92.2
Never married	81.5	75.6	75.9	72.4	74.8	87.0	88.9	89.4	87.5	84.0	90.7
Employment status											
Currently employed	83.6	79.2	74.4	79.6	83.5	86.8	89.0	91.0	88.4	87.4	90.8
Unemployed	80.5	73.3	66.9	73.1	85.3	98.9	88.0	90.0	86.1	84.8	*92.4
Not in labor force	87.9	87.4	80.9	82.0	87.1	90.0	88.1	89.8	82.3	86.4	91.4

¹ Includes persons with unknown sociodemographic characteristics.

Note: Denominator for each cell excludes unknowns.

Data based on household interviews of the civilian noninstitutionalized population.

* Relative standard error greater than 30%.

Source: National Center for Health Statistics. C.A. Schoenborn. 1988. Health promotion and disease prevention: United States, 1985. Vital and Health Statistics. Series 10, No. 163. DHHS Pub. No. (PHS) 88-1591. Washington, U.S. Government Printing Office, Table 8, p. 25.

Table 15

Percent of births with selected characteristics by Hispanic origin of mother and by race of child for mothers of non-Hispanic origin: total of 23 reporting States and the District of Columbia, 1987

Characteristic	Origin of mother									
	All origins ¹	Hispanic						Non-Hispanic		
		Total	Mexican	Puerto Rican	Cuban	Central and South American	Other and unknown Hispanic	Total ²	White	Black
Fourth and higher order births	10.3	15.5	18.1	11.8	5.5	11.4	11.7	9.2	7.7	14.1
Births to unmarried mothers	25.3	32.6	28.9	53.0	16.1	37.1	34.2	23.9	13.9	63.1
Mothers completing 12 years or more of school ³	79.0	57.3	41.6	55.7	81.3	65.9	65.7	81.1	84.9	68.1
Mothers born in the United States	82.7	43.9	43.2	54.4	14.9	2.5	82.2	90.8	95.3	91.4
Mothers who began prenatal care in the first trimester	74.4	61.0	60.0	57.4	83.1	59.1	65.5	77.2	81.9	60.4
Mothers who had late or no prenatal care	7.0	12.7	13.0	17.1	3.9	13.5	9.3	5.8	4.1	11.6
Births of low birth weight ⁴	7.0	6.2	5.7	9.3	5.9	5.7	6.9	7.1	5.6	12.9
Preterm births ⁵	10.4	11.0	11.0	12.6	8.9	10.3	11.0	10.3	8.2	18.3

¹ Includes origin not stated.

² Includes races other than White and Black.

³ Excludes data for California and Texas, which did not require reporting of educational attainment of mother.

⁴ Birth weight of less than 2,500 grams (5 lb. 8 oz.).

⁵ Born prior to 37 completed weeks of gestation.

Source: National Center for Health Statistics, Advanced Report of Final Natality Statistics, 1987, Monthly Vital Statistics Report Vol. 38, No. 3, Supplement, June 29, 1989, Table 27, p. 39.

Table 16

Percentage of babies born to women obtaining early and late or no care, for Asian or Pacific Islander, American Indian, White, and Black subgroups and for all races, United States, 1986

Care received	Asian or Pacific Islander						American Indian	White	Black	All races
	Chinese	Japanese	Hawaiian	Filipino	Other	Total				
Early	82.4	86.2	71.0	78.6	71.3	75.6	60.7	79.2	61.6	75.9
Late or none	4.0	2.8	6.5	4.3	7.6	6.0	11.6	5.0	10.6	6.0

Source: National Center for Health Statistics, Vital Statistics of the United States, 1986, Vol. 1, Natality, Department of Health and Human Services Pub. No. (PHS) 88-1113, Public Health Service, Hyattsville, MD, 1987.

Table 17

Percentage of babies born to women obtaining early and late or no care, by Hispanic and non-Hispanic origin, various reporting areas, 1978, 1982, and 1986

Care received	Hispanic						Non-Hispanic		
	Mexican	Puerto Rican	Cuban	Central and South American	Other	Total	White	Black	Total
1978									
Early	58.7	47.7	75.9	51.5	67.0	57.0	80.7	59.1	77.0
Late or none	11.5	19.9	6.5	16.0	8.3	13.1	3.3	10.9	4.6
1982									
Early	60.7	54.5	79.3	58.5	66.0	61.0	81.2	60.1	76.9
Late or none	12.0	17.2	4.9	13.4	9.3	12.1	3.8	10.5	5.2
1986									
Early	58.9	57.3	81.9	58.8	66.6	60.4	81.6	60.5	77.1
Late or none	13.4	17.4	4.2	13.7	8.9	13.0	4.1	11.2	5.6

Sources: (1) National Center for Health Statistics, "Births of Hispanic Parentage, 1978," by S.J. Ventura and R. Heuser. Monthly Vital Statistics Report, Vol. 29, No. 12, Supplement, Department of Health and Human Services Pub. No. (PHS) 81-1120, Hyattsville, MD, 1981 (17 states and the District of Columbia reporting); (2) National Center for Health Statistics, "Births of Hispanic Parentage, 1982," by S.J. Ventura. Monthly Vital Statistics Report, Vol. 34, No. 4, Supplement, Department of Health and Human Services Pub. No. (PHS) 85-1120, Hyattsville, MD, 1985 (23 states and the District of Columbia reporting); and (3) National Center for Health Statistics, Vital Statistics of the United States, 1986, Vol. 1, Natality, Department of Health and Human Services Pub. No. (PHS) 88-1113, Public Health Service, Hyattsville, MD, 1987.

Table 18

Percentage of babies born to women obtaining late or no care,
by race, United States, 1969–1986

Year	White	Black	Total
1969	6.3	18.2	7.3
1970	6.2	16.6	7.9
1971	5.8	14.6	7.2
1972	5.5	13.2	7.0
1973	5.4	12.4	6.7
1974	5.0	11.4	6.2
1975	5.0	10.5	6.0
1976	4.8	9.9	5.7
1977	4.7	9.6	5.6
1978	4.5	9.3	5.4
1979	4.3	8.9	5.1
1980	4.3	8.8	5.1
1981	4.3	9.1	5.2
1982	4.5	9.6	5.5
1983	4.6	9.7	5.6
1984	4.7	9.6	5.6
1985	4.7	10.0	5.7
1986	5.0	10.6	6.0

Source: National Center for Health Statistics, Vital Statistics of the United States, 1986, Vol. 1, Natality, Department of Health and Human Services Pub. No. (PHS) 88-1113, Public Health Service, Hyattsville, MD, 1987.

Table 19

Percent distribution of live births by month of pregnancy prenatal care began, by educational attainment of mother and race of child: total of 47 reporting States and the District of Columbia, 1986

Years of school completed by mother and race of child	Total	Month of pregnancy prenatal care began				
		1st and 2d month	3d month	4th-6th month	7th-9th month	No prenatal care
All races ¹	100.0	54.8	22.2	17.5	3.8	1.7
0-8 years	100.0	31.3	21.3	32.2	10.2	5.0
9-11 years	100.0	35.1	22.9	30.3	7.8	4.0
12 years	100.0	53.7	23.3	18.0	3.5	1.5
13-15 years	100.0	62.9	21.8	12.4	2.1	.8
16 years or more	100.0	72.7	19.3	6.7	1.0	.3
Not stated	100.0	43.7	22.0	21.7	7.2	5.4
White	100.0	58.8	22.1	14.9	3.0	1.2
0-8 years	100.0	33.1	21.7	30.5	10.0	4.6
9-11 years	100.0	37.9	23.7	28.4	7.0	3.0
12 years	100.0	57.6	23.3	15.4	2.8	1.0
13-15 years	100.0	66.0	21.5	10.4	1.6	.5
16 years or more	100.0	74.0	19.1	5.9	.8	.2
Not stated	100.0	47.8	22.3	19.4	6.4	4.1
Black	100.0	39.0	22.3	28.1	6.6	4.0
0-8 years	100.0	26.1	20.2	36.8	10.1	6.7
9-11 years	100.0	29.1	21.1	34.6	9.1	6.1
12 years	100.0	38.6	23.2	28.4	6.3	3.6
13-15 years	100.0	48.9	23.1	21.6	4.3	2.1
16 years or more	100.0	62.3	21.3	13.1	2.3	1.0
Not stated	100.0	31.2	21.5	27.4	9.0	10.9

¹ Includes races other than White and Black.

Source: National Center for Health Statistics, Vital Statistics of the United States, 1986, Vol. 1, Natality, Department of Health and Human Services Pub. No. (PHS) 88-1113, Public Health Service, Hyattsville, MD, 1987, Table 1-45, p. 73.

Table 20

Percent distribution of live births by month of pregnancy prenatal care began, by marital status of mother and race of child: United States, 1986

Month of pregnancy prenatal care began	Total births			Births to married women			Births to unmarried women		
	All races ¹	White	Black	All races ¹	White	Black	All races ¹	White	Black
	Percent								
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1st and 2d month	54.2	57.5	39.3	60.6	61.9	50.3	32.9	33.5	32.3
3d month	21.8	21.7	22.3	21.7	21.5	23.0	22.0	22.2	21.8
4th-6th month	18.1	15.9	27.9	13.9	13.1	20.6	31.7	31.1	32.5
7th-9th month	4.1	3.5	6.6	2.8	2.5	4.1	8.5	8.6	8.1
No prenatal care	1.9	1.5	4.0	1.0	.9	2.0	4.9	4.5	5.3

¹ Includes races other than White and Black.

Note: For 41 States and the District of Columbia, marital status of mother is reported on the birth certificate, and for 9 States, mother's marital status is inferred from other items on the birth certificate. Figures for marital status not classifiable are included in births to married women.

Source: National Center for Health Statistics, Vital Statistics of the United States, 1986, Vol. 1, Natality, Department of Health and Human Services Pub. No. (PHS) 88-1113, Public Health Service, Hyattsville, MD, 1987, Table 1-46, p. 74.

Table 21

Percent distribution of live births by month of pregnancy prenatal care began, by age of mother and race of child: United States, 1986

Month of pregnancy prenatal care began, live-birth order, and race of child	All ages	Age of mother											
		Under 15 years	15-19 years						20-24 years	25-29 years	30-34 years	35-39 years	40 years and over
			Total	15 years	16 years	17 years	18 years	19 years					
All races ¹	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1st and 2d month	54.2	18.9	30.6	22.4	25.5	28.5	30.7	34.6	47.8	61.4	64.9	62.0	52.1
3d month	21.8	17.2	22.8	19.9	21.9	22.6	23.1	23.3	23.0	21.2	20.6	20.9	22.0
4th-6th month	18.1	43.1	34.1	40.9	38.3	35.9	33.8	30.9	21.8	13.3	11.2	13.0	18.6
7th-9th month	4.1	14.2	8.7	11.5	10.0	9.1	8.6	7.8	5.1	2.7	2.1	2.7	4.6
No prenatal care	1.9	6.6	3.8	5.2	4.3	3.9	3.7	3.4	2.3	1.3	1.1	1.5	2.6
White	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1st and 2d month	57.5	21.1	32.5	23.6	26.9	29.8	32.1	36.5	50.7	64.1	67.3	64.4	54.7
3d month	21.7	17.7	23.6	21.0	22.9	23.5	24.1	23.9	23.0	20.9	20.3	20.6	21.8
4th-6th month	15.9	40.6	32.4	39.2	36.6	34.6	32.3	29.5	19.9	11.7	9.8	11.4	17.0
7th-9th month	3.5	14.3	8.2	11.0	9.7	8.6	8.2	7.2	4.5	2.3	1.8	2.4	4.2
No prenatal care	1.5	6.3	3.3	5.1	3.9	3.5	3.2	2.9	1.9	1.0	.8	1.2	2.3
Black	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1st and 2d month	39.3	17.6	26.6	21.2	23.4	25.8	27.3	29.4	36.8	46.9	50.4	48.8	40.7
3d month	22.3	16.8	20.8	18.6	20.4	20.7	20.8	21.8	22.8	22.8	22.6	22.1	23.4
4th-6th month	27.9	44.8	37.8	42.9	41.1	38.6	37.3	34.8	29.2	22.2	19.9	21.4	25.5
7th-9th month	6.6	13.9	9.8	11.9	10.1	10.0	9.6	9.2	7.0	4.7	3.9	4.1	6.1
No prenatal care	4.0	6.9	4.9	5.4	5.0	4.9	5.0	4.7	4.1	3.4	3.1	3.6	4.3

¹ Includes races other than White and Black.

Source: National Center for Health Statistics, Vital Statistics of the United States, 1986, Vol. 1, Natality, Department of Health and Human Services Pub. No. (PHS) 88-1113, Public Health Service, Hyattsville, MD, 1987, Table 1-44, p. 72.

Table 22

Percent of live births with delayed or no prenatal care by race/Hispanic origin according to maternal age, educational attainment, and marital status: 47 reporting States and the District of Columbia ¹, 1986

	Total	Black ²	Hispanic	White ²
Percent to mothers under 20 years of age	12.6	23.2	16.4	10.2
Percent to mothers completing less than 12 years of school	20.1	31.2	42.3	17.3
Percent to unmarried mothers	23.6	62.6	31.6	17.0

¹ Hispanic data are derived from a total of 23 reporting states and the District of Columbia.

² Includes Hispanic.

Source: Compiled from National Center for Health Statistics, Vital Statistics of the United States, Vol. 1, Natality, Department of Health and Human Services Pub. No. (PHS) 88-1113, Public Health Service, Hyattsville, MD, 1987.

Table 23

Progress toward the 1990 immunization objectives for improved health status of children, by disease: United States, 1979-1987

Disease	No. reported cases		1990 objective
	1979	1987	
Diphtheria	59	3	< 50
Measles	13,597	3,655	< 500
Mumps	14,225	12,848	< 1,000
Pertussis	1,623	2,823	< 1,000
Poliomyelitis (paralytic)	26	0	< 10
Rubella	11,795	306	< 1,000
Congenital rubella syndrome	62	5	< 10
Tetanus	81	48	< 50

Source: Centers for Disease Control, Progress Toward Achieving the National 1990 Objectives for Immunizations, Morbidity and Mortality Weekly Report, October 19, 1988, Vol. 37, No. 40, Table 1.

Table 24

Vaccinations of children 1–4 years of age for selected diseases, by race and residence in metropolitan statistical area (MSA): United States, 1970, 1976, and 1983–1985

Vaccination and year	Percent of population					
	Total	Race		Inside MSA		Outside MSA
		White	All other	Central city	Remaining areas	
Measles:						
1970	57.2	60.4	41.9	55.2	61.7	54.3
1976	65.9	68.3	54.8	62.5	67.2	67.3
1983	64.9	66.8	57.2	60.4	66.3	66.7
1984	62.8	65.4	52.0	56.6	63.3	66.4
1985	60.8	63.6	48.8	55.5	63.3	61.9
Rubella:						
1970	37.2	38.3	31.8	38.3	39.2	34.3
1976	61.7	63.8	51.5	59.5	63.5	61.5
1983	64.0	66.3	54.7	59.5	65.2	66.0
1984	60.9	63.9	48.3	56.1	60.4	64.6
1985	58.9	61.6	47.7	53.9	61.0	60.3
DTP: ^{1, 2}						
1970	76.1	79.7	58.8	68.9	80.7	77.1
1976	71.4	75.3	53.2	64.1	75.7	72.9
1983	65.7	70.1	47.7	55.4	69.4	69.4
1984	65.7	69.1	51.3	57.9	66.6	69.8
1985	64.9	68.7	48.7	55.5	68.4	67.9
Polio: ²						
1970	65.9	69.2	50.1	61.0	70.8	64.7
1976	61.6	66.2	39.9	53.8	65.3	63.9
1983	57.0	61.9	36.7	47.7	60.3	60.3
1984	54.8	58.4	39.9	48.7	55.2	58.5
1985	55.3	58.9	40.1	47.1	58.4	58.0
Mumps:						
1970						
1976	48.3	50.3	38.7	45.6	50.7	47.9
1983	59.5	61.8	50.0	52.6	60.2	63.6
1984	58.7	61.3	47.7	51.8	58.3	63.6
1985	58.9	61.8	47.0	52.4	61.0	61.4

—Not available

¹ Diphtheria-tetanus-pertussis.

² 3 doses or more.

Note: Beginning in 1976, the category "don't know" was added to response categories. Prior to 1976, the lack of this option resulted in some forced positive answers, particularly for vaccinations requiring multiple dose schedules, that is, polio and DTP.

Data are based on household interviews of a sample of the civilian noninstitutionalized population.

Source: Abstracted from National Center for Health Statistics, "Health, United States, 1987," Department of Health and Human Services Pub. No. (PHS) 88-1232, Public Health Service, Washington, U.S. Government Printing Office, Mar. 1988, Table 35, p. 79.

Table 25

Vaccinations of children 1–4 years of age for selected diseases, according to race and residence in metropolitan statistical area (MSA) for United States Immunization Survey subsample consulting vaccination records, United States, 1979–81, 1983–85

Respondents consulting vaccination records	Percent of population					
	Total	Race		Inside MSA		Outside MSA
		White	All other	Central city	Remaining areas	
Measles:						
1979	73.6	74.5	66.3	68.7	75.7	74.5
1980	76.0	77.5	63.2	72.5	77.0	76.8
1981	75.6	76.8	66.4	73.4	76.1	76.3
1983	77.3	77.2	77.8	75.5	78.7	76.8
1984	76.5	77.7	67.4	73.9	76.3	78.0
1985	76.9	78.1	67.2	73.5	76.7	79.0
Rubella:						
1979	74.3	76.3	57.8	68.8	75.4	76.4
1980	74.9	76.0	65.0	69.6	78.1	74.6
1981	75.2	76.0	68.8	72.3	75.5	76.4
1983	76.4	76.8	73.0	74.2	77.5	76.3
1984	73.5	75.0	61.8	71.1	71.2	76.8
1985	73.3	75.0	64.1	70.4	75.0	74.6
DTP (3+ doses):						
1979	84.1	85.9	69.0	77.6	86.9	85.3
1980	85.1	87.0	68.5	79.3	85.1	88.0
1981	86.9	87.7	80.3	81.5	87.6	89.0
1983	86.0	87.5	74.2	81.8	88.0	86.1
1984	84.7	85.9	75.7	81.4	84.4	86.7
1985	87.0	88.5	75.2	79.6	89.7	88.6
Polio (3+ doses):						
1979	76.0	78.6	54.6	71.0	76.8	78.0
1980	77.7	80.0	58.0	71.5	80.1	78.7
1981	78.3	79.9	66.0	73.2	80.3	79.0
1983	76.5	78.5	61.0	73.5	78.6	76.0
1984	73.7	75.9	56.7	72.3	72.5	75.4
1985	75.7	77.5	61.5	68.9	79.6	75.9
Mumps:						
1979	67.9	69.1	57.7	59.5	68.9	71.6
1980	71.8	73.2	60.1	66.3	73.8	72.8
1981	72.7	73.7	64.5	67.1	73.9	74.4
1983	75.4	75.3	67.1	68.6	75.5	75.9
1984	72.9	74.5	60.8	67.2	72.5	76.1
1985	75.5	77.1	62.7	70.5	76.8	77.0

Source: 1985 data compiled from National Center for Health Statistics, "Health, United States, 1987," Department of Health and Human Services Pub. No. (PHS) 88-1232, Public Health Service, Washington, U.S. Government Printing Office, Mar. 1988, Table 35, p. 79. All other data from Centers for Disease Control (unpublished data) from the United States Immunization Survey.

Table 26

Percent distribution of persons receiving influenza vaccine within the previous 12 months, according to race, for persons 65 years and over and by age for persons with certain debilitating conditions, 1970, 1976, 1979–85

	1970	1976	1979	1980	1981	1982	1983	1984	1985
White									
Population 65 years and over	18.7	21.8	22.5	20.3	20.6	22.4	21.3	23.1	23.6
Persons with conditions:									
20–64	—	14.8	13.9	11.7	11.4	11.6	10.0	9.9	10.5
20–29	—	6.4	6.9	6.7	3.6	4.7	6.0	4.5	4.5
30–39	—	9.9	7.2	6.2	6.5	4.6	5.6	5.1	5.7
40–49	—	12.0	12.3	8.1	7.9	9.3	7.3	7.1	7.8
50–64	—	19.3	18.0	15.6	15.7	15.8	13.1	13.6	14.6
All other races									
Population 65 years and over	14.3	14.5	15.2	14.0	15.9	15.5	16.9	13.2	13.8
Persons with conditions:									
20–64	—	14.4	12.7	11.6	11.4	10.7	10.7	9.6	9.1
20–29	—	12.7	13.2	7.0	11.8	7.9	5.8	4.0	9.7
30–39	—	15.2	11.8	12.6	8.6	9.8	10.1	11.1	6.6
40–49	—	10.8	11.3	12.2	9.8	10.1	7.4	10.4	8.5
50–64	—	16.7	13.7	12.0	13.2	12.1	14.2	10.2	10.2

Note: Data are based on household interviews of the civilian noninstitutionalized population.

—Not available.

Sources: Compiled from (1) Centers for Disease Control, unpublished data from the United States Immunization Survey and (2) U.S. Department of Health, Education and Welfare, Public Health Center for Disease Control, HEW Pub. No. (CDC)70-8221, p. 52 and HEW Pub. No. (CDC)76-8221, p. 64.

Table 27

Self-assessment of health according to selected characteristics: United States, 1981, 1983, 1986
(percentage of population ¹)

Selected characteristics	Self-assessment of health as fair or poor		
	1981	1983	1986
Total ^{2, 3}	11.8	10.6	9.5
Age ²			
Under 15 years	*4.0	3.0	2.5
Under 5 years	*4.2	2.9	2.7
5-14 years	*3.8	3.1	2.4
15-44 years	*8.3	5.9	5.4
45-64 years	22.0	20.0	18.1
65 years and over	30.1	33.1	29.7
65-74 years	—	32.1	27.4
75 years and over	—	34.7	33.4
Sex ²			
Male	11.4	10.1	9.1
Female	12.1	11.0	10.0
Race ²			
White	10.8	9.5	8.6
Black	19.7	19.5	17.1
Family Income ²			
Less than \$10,000	22.5	21.1	20.4
\$10,000-\$14,999	18.3	13.7	14.3
\$15,000-\$19,999	12.4	10.4	11.4
\$20,000-\$34,999	9.6	6.9	7.0
\$35,000 or more	6.5	4.6	4.3
Geographic Region ²			
Northeast	10.3	9.1	8.7
North Central	10.9	9.7	8.4
South	14.3	13.0	12.0
West	10.5	9.5	7.8
Location of residence ²			
Within MSA	11.0	9.9	8.9
Outside MSA	13.5	11.9	11.4

¹ Denominator includes unknown self-assessment of health.

² Age adjusted.

³ Includes all other races not shown separately and unknown family income.

* Age categories for 1981 were: under 17 years, under 6 years, 6-16 years, and 17-44 years.

— Not available.

Note: Data are based on household interviews of a sample of the civilian noninstitutionalized population.

Source: Compiled from National Center for Health Statistics, "Health, United States, 1983," Department of Health and Human Services Pub. No. (PHS)84-1232, Dec. 1983, U.S. Government Printing Office, Table 27, p. 126, and "Health, United States, 1987," Department of Health and Human Services Pub. No. (PHS)88-1232, Mar. 1988, U.S. Government Printing Office, Table 45, p. 91.

Table 28

Number of persons and percent distribution by respondent—assessed health status by sociodemographic characteristics: United States, 1987

Characteristic	Respondent-assessed health status						
	All persons ¹ Number in thousands	All health statuses ²	Percent distribution				
			Excellent	Very good	Good	Fair	Poor
All persons ³	238,550	100.0	39.3	27.9	22.9	7.3	2.7
Age							
Under 5 years	18,176	100.0	54.0	27.4	16.1	2.3	0.4
5–17 years	45,103	100.0	53.4	26.9	17.3	2.1	0.3
18–24 years	26,131	100.0	43.4	31.2	21.3	3.7	0.5
25–44 years	76,012	100.0	41.9	30.8	21.1	5.0	1.2
45–64 years	44,975	100.0	27.3	26.5	28.8	11.7	5.7
65 years and over	28,153	100.0	15.4	20.9	32.9	21.2	9.5
Sex and age							
Male							
All ages	115,451	100.0	42.4	27.5	21.1	6.3	2.7
Under 5 years	9,301	100.0	53.7	26.9	16.5	2.6	* 0.3
5–17 years	23,072	100.0	54.1	26.6	17.0	2.0	0.3
18–24 years	12,730	100.0	48.0	29.2	19.3	3.0	0.5
25–44 years	37,233	100.0	45.9	30.0	19.0	4.0	1.1
45–64 years	21,465	100.0	30.0	27.3	26.2	10.5	6.0
65 years and over	11,649	100.0	16.0	20.2	32.4	20.9	10.4
Female							
All ages	123,099	100.0	36.3	28.2	24.5	8.2	2.8
Under 5 years	8,875	100.0	54.2	27.9	15.6	1.9	* 0.4
5–17 years	22,031	100.0	52.6	27.2	17.7	2.3	0.3
18–24 years	13,401	100.0	39.0	33.1	23.1	4.3	0.5
25–44 years	38,779	100.0	38.1	31.6	23.1	5.9	1.3
45–64 years	23,509	100.0	25.0	25.8	31.2	12.7	5.3
65 years and over	16,504	100.0	15.0	21.4	33.2	21.4	8.9
Race and age							
White							
All ages	201,858	100.0	40.6	28.3	21.8	6.8	2.6
Under 5 years	14,759	100.0	55.8	27.8	14.2	1.9	0.3
5–17 years	36,613	100.0	56.1	27.0	14.7	1.8	0.3
18–24 years	21,390	100.0	45.0	31.8	19.7	3.1	0.4
25–44 years	64,555	100.0	43.7	31.3	19.7	4.2	1.0
45–64 years	39,134	100.0	28.7	27.3	28.4	10.6	5.1
65 years and over	25,408	100.0	16.0	21.4	33.3	20.4	8.9
Black							
All ages	28,947	100.0	30.5	24.9	29.4	11.0	4.2
Under 5 years	2,739	100.0	45.8	24.7	25.1	4.2	* 0.4
5–17 years	6,978	100.0	39.7	25.6	30.5	3.7	* 0.5
18–24 years	3,618	100.0	35.8	27.4	29.1	6.7	* 1.0
25–44 years	8,703	100.0	29.6	27.9	29.9	10.1	2.5
45–64 years	4,558	100.0	16.0	20.6	30.5	21.8	11.1
65 years and over	2,352	100.0	8.9	16.6	28.2	29.7	16.7

* Relative standard error more than 30 percent.

¹ Includes unknown health status.

² Excludes unknown health status.

³ Includes other races and unknown family income.

Note: Data are based on household interviews of the civilian noninstitutionalized population.

Source: National Center for Health Statistics, Current Estimates from the National Health Interview Survey: United States, 1987. Vital and Health Statistics Series 10, No. 166, Department of Health and Human Services Pub. No. (PHS) 88-1594, Table 70, p. 114.

Table 29

Percent distribution for total number of good health habits of persons 18 years of age and older, by sex and selected characteristics, United States, 1985

Characteristic	Number in thousands	Men				Number in thousands	Women			
		Number of good habits					Number of good habits			
		0-3	4	5	6-7		0-3	4	5	6-7
Total	80,779	36.6	27.8	23.4	12.2	90,192	33.3	30.9	24.8	11.1
Age										
18-29 years	23,569	40.2	27.5	22.4	9.8	24,756	35.7	31.2	23.1	10.1
30-44 years	24,891	41.6	27.9	20.5	10.0	26,201	36.3	29.7	23.3	10.7
45-64 years	21,215	34.4	28.2	24.7	12.7	23,297	35.8	29.6	24.0	10.6
65-74 years	7,311	21.7	26.4	30.1	21.7	9,381	23.4	33.6	29.4	13.6
75 years and older	3,794	22.3	29.8	28.2	19.7	6,558	17.8	35.0	33.0	14.0
Education										
Less than 12 years	19,186	43.4	28.5	19.8	8.3	22,244	41.6	31.3	20.3	6.8
12 years	28,736	41.2	27.2	22.1	9.5	37,740	34.8	32.3	23.6	9.3
More than 12 years	32,594	28.5	28.0	26.7	16.8	29,942	25.1	28.8	29.7	16.4
Income										
Less than \$7,000	6,223	41.7	28.1	22.0	8.3	10,386	39.9	31.6	21.7	6.8
\$7,000-\$14,999	11,158	39.9	27.8	21.9	10.3	15,277	35.0	32.4	23.4	9.1
\$15,000-\$24,999	16,914	38.0	28.6	22.1	11.3	17,939	35.0	31.3	23.6	10.1
\$25,000-\$39,999	21,212	35.9	27.7	24.2	12.1	19,503	31.7	30.5	26.0	11.8
\$40,000 or more	16,312	31.0	26.4	25.5	17.1	15,595	27.2	28.3	28.0	16.5
Race										
White	70,582	35.7	27.6	23.8	12.9	77,657	31.3	30.9	25.9	11.9
All other	10,197	43.0	29.5	20.5	7.1	12,536	45.4	30.9	17.6	6.1
Black	8,247	46.2	27.4	19.4	6.9	10,333	48.8	31.2	15.6	4.4

Note: Excludes persons for whom data on all health habits are unknown.

Source: C.A. Schoenborn, "Health Habits of U.S. Adults, 1985: The 'Alameda 7' Revisited," Public Health Reports, Nov-Dec 1986, Vol. 101, No. 6, p. 579.

Table 30

Prevalence of cigarette smoking among racial/ethnic groups * by race and sex

Race/Sex	Persons 18 years of age or older			
	Current smoker (%), cigarettes per day			
	0-14	15-24	25+	Any amount
All Races	9.1	11.8	7.6	28.8
Males	8.6	12.2	10.2	31.2
Females	9.6	11.5	5.2	26.5
Whites (non-Hispanic)	7.3	12.6	8.9	29.0
Males	6.3	12.4	11.8	30.6
Females	8.3	12.8	6.2 ²⁰	27.5
Blacks (non-Hispanic)	19.8	10.0	2.5	32.9
Males	21.2	13.7	3.4	38.9
Females	18.7	7.1	1.8	28.2

* Estimates are weighted to reflect U.S. Census population estimates for 1987.

Source: Department of Health and Human Services, "Cancer Statistics Review 1973-1986," National Institutes of Health Pub. No. 89-2789, May 1989, Table II-9, p. II.38.

Table 31

Cigarette smoking by persons 20 years of age and over, by sex, race, and age: United States, 1965, 1976, 1983, and 1987

Sex, race, and age	Percent of persons							
	Current smoker ¹				Former smoker			
	1965	1976	1983	1987	1965	1976	1983	1987
Male								
20 years and over, age adjusted	52.1	41.6	35.4	31.5	20.3	29.6	31.1	31.4
20 years and over, crude	52.4	41.9	35.7	31.7	20.5	28.9	29.5	30.1
20-24 years	59.2	45.9	36.9	31.1	9.0	12.2	9.1	7.8
25-34 years	60.7	48.5	38.8	34.8	14.7	18.3	19.8	17.4
35-44 years	58.2	47.6	41.0	36.6	20.6	27.3	27.5	28.1
45-64 years	51.9	41.3	35.9	33.5	24.1	37.1	40.1	40.1
65 years and over	28.5	23.0	22.0	17.2	28.1	44.4	48.1	53.4
White:								
20 years and over, age adjusted	51.3	41.0	34.7	30.7	21.2	30.7	32.0	32.6
20-44 years	58.5	46.8	38.8	34.3	16.9	20.5	20.5	20.4
20-24 years	58.1	45.3	36.1	31.6	9.6	13.3	9.7	8.3
25-34 years	60.1	47.7	38.6	33.8	15.5	18.9	20.5	18.1
35-44 years	57.3	46.8	40.8	36.2	21.5	28.9	27.8	29.3
45 years and over	44.4	35.0	30.1	26.3	26.1	40.5	44.1	46.6
45-64 years	51.3	40.6	35.0	32.4	25.1	38.1	41.2	41.6
65 years and over	27.7	22.8	20.6	16.0	28.7	45.6	49.9	55.1
Black:								
20 years and over, age adjusted	59.6	50.1	42.6	40.3	12.6	20.2	23.2	22.2
20-44 years	67.7	57.4	41.8	41.3	8.3	10.2	15.4	12.9
45 years and over	52.3	42.3	42.9	39.5	17.0	30.0	30.6	32.0
Female								
20 years and over, age adjusted	34.2	32.5	29.9	27.0	8.2	13.9	16.4	18.0
20 years and over, crude	34.1	32.0	29.4	26.8	8.2	13.8	16.2	17.9
20-24 years	41.9	34.2	37.5	28.1	7.3	10.4	10.8	10.5
25-34 years	43.7	37.5	32.6	31.8	9.9	12.9	13.8	15.6
35-44 years	43.7	38.2	33.8	29.6	9.6	15.8	17.1	19.4
45-64 years	32.0	34.8	31.0	28.6	8.6	15.9	18.6	20.7
65 years and over	9.6	12.8	13.1	13.7	4.5	11.7	18.7	19.8
White:								
20 years and over, age adjusted	34.5	32.4	29.8	27.3	8.5	14.6	17.2	18.9
20-44 years	43.3	36.8	34.3	30.5	9.6	14.2	15.2	17.2
20-24 years	41.9	34.4	37.5	29.4	8.0	11.4	11.6	11.5
25-34 years	43.4	37.1	32.2	31.9	10.3	13.7	15.1	16.9
35-44 years	43.9	38.1	34.8	29.2	9.9	17.0	18.0	20.6
45 years and over	25.1	26.7	23.6	22.7	7.4	14.6	19.2	20.9
45-64 years	32.7	34.7	30.6	29.0	8.8	16.4	19.0	21.4
65 years and over	9.8	13.2	13.2	14.0	4.5	11.5	19.5	20.2
Black:								
20 years and over, age adjusted	32.7	34.7	32.5	27.9	5.9	10.2	10.7	13.2
20-44 years	45.0	40.1	36.2	32.7	5.9	8.1	7.7	8.9
45 years and over	20.6	28.3	28.1	22.7	6.0	12.4	13.4	17.4

¹ A current smoker is a person who has smoked at least 100 cigarettes and who now smokes; includes occasional smokers.

Note: Excludes unknown smoking status.

Data are based on household interviews of the civilian noninstitutionalized population.

Source: National Center for Health Statistics, "Health, United States, 1988," Department of Health and Human Services Pub. No. (PHS) 89-1232, Public Health Service, Washington, U.S. Government Printing Office, Mar. 1989, Table 51, p. 96.

Table 32

Comparison of current smoking prevalence rate among three Hispanic groups in the 1982–1984 HHANES with Whites and Blacks from the 1985 Health Interview Survey* (In percent)

Hispanic ethnic group	Sex–Age Group									
	Men					Women				
	25–34	35–44	45–54	55–64	65–74	25–34	35–44	45–54	55–64	65–74
Mexican American	42.5	43.5	44.9	44.2	41.5	23.6	30.4	26.9	21.1	16.6
Puerto Rican	41.9	42.7	33.4	32.8	35.9	41.1	34.3	30.3	12.0	16.6
Cuban American	57.7	42.3	36.8	39.0	17.7	34.7	30.1	19.3	20.6	9.7
Whites	37.1	36.3	33.4	30.1	21.2	32.6	31.4	32.9	27.4	17.8
Blacks	45.2	44.9	47.4	44.6	31.0	35.7	40.2	37.0	28.9	18.6

*Rates are weighted to reflect the values that would have occurred if the entire Hispanic population had been studied.

Source: Suzanne G. Haynes, Clair Harvey, Henry Montes, Herbert Nickens, and Bernice H. Cohen, "Patterns of Cigarette Smoking Among Mexican Americans, Puerto Ricans and Cuban Americans Aged 20–74 Years in the U.S.: Results from the Hispanic Health and Nutrition Exam Survey, 1982–84," American Journal of Public Health (in press).

Table 33

Amount smoked (%) by Hispanic ethnic group from the HHANES by sex and age* (In percent)

Ethnic group/cigarettes smoked per day	Sex–Age Group							
	Men (age adjusted)				Women (age adjusted)			
	Total	20–34	35–54	55–74	Total	20–34	35–54	55–74
Mexican American								
10	41.1	47.7	40.8	31.2	52.2	60.0	46.6	47.3
10–19	25.1	26.1	22.8	26.4	29.0	24.9	29.3	34.9
20+	33.8	26.2	36.4	42.5	18.8	15.1	24.1	17.8
Puerto Rican								
10	20.7	20.1	22.3	19.5	32.5	28.0	27.8	45.6
10–19	27.0	25.5	25.2	31.8	32.5	39.1	30.9	24.0
20+	52.3	54.4	52.6	48.7	35.1	32.9	40.7	30.4
Cuban American								
10	17.1	17.0	20.3	13.2	33.4	30.2	33.4	38.6
10–19	18.8	25.3	15.6	13.0	17.9	20.5	12.8	20.7
20+	64.1	57.8	64.1	73.8	48.6	49.4	53.9	40.7

*Percentages are weighted to reflect the values that would occur if the entire Hispanic population had been studied.

Source: Suzanne G. Haynes, Clair Harvey, Henry Montes, Herbert Nickens, and Bernice H. Cohen, "Patterns of Cigarette Smoking Among Mexican Americans, Puerto Ricans and Cuban Americans Aged 20–74 Years in the U.S.: Results from the Hispanic Health and Nutrition Exam Survey, 1982–84," American Journal of Public Health (in press).

Table 34

Percent of persons 18 years of age and over who currently smoked cigarettes, by sex, age and selected characteristics: United States, 1985

Characteristic	Both sexes 18 years and over	Male					Female				
		Total	18-29 years	30-44 years	45-64 years	65 years and over	Total	18-29 years	30-44 years	45-64 years	65 years and over
All persons ¹	30.1	32.6	32.3	38.0	33.4	19.6	27.9	31.7	31.2	29.9	13.5
Education level											
Less than 12 years	35.4	40.1	50.9	57.5	41.9	21.1	31.5	47.3	47.3	35.2	12.3
12 years	33.5	36.6	37.4	43.3	33.5	21.2	31.1	36.7	35.1	28.6	15.2
More than 12 years	23.1	24.8	19.5	29.6	26.3	14.6	21.2	19.2	21.8	26.6	14.0
13-15 years	27.3	29.9	20.6	38.8	35.7	18.1	25.0	21.8	28.9	30.2	14.6
16 years or more	18.4	20.1	17.7	22.7	20.2	11.8	16.2	14.3	15.2	21.9	13.0
Family income											
Less than \$10,000	32.4	36.4	32.0	55.9	45.0	25.2	29.9	38.8	45.0	34.7	13.2
\$10,000-\$19,999	33.1	37.0	37.9	47.1	40.3	20.5	29.8	34.0	36.4	32.4	13.0
\$20,000-\$34,999	30.7	33.1	31.2	38.2	34.1	16.1	28.2	29.7	28.4	31.6	14.7
\$35,000-\$49,999	27.9	29.4	25.9	34.6	28.1	15.7	26.3	23.8	28.5	28.0	14.9
\$50,000 or more	23.5	23.6	26.3	24.3	23.6	*10.3	23.4	22.6	24.4	23.6	*17.1
Race											
White	29.6	31.7	32.1	37.0	32.1	18.9	27.7	32.6	30.7	29.7	13.3
Black	34.9	39.9	34.4	45.6	46.1	27.8	31.0	29.4	38.0	33.4	14.5
Geographic region											
Northeast	29.0	29.5	28.6	36.0	29.5	17.0	28.5	33.4	31.8	31.7	12.2
Midwest	30.5	32.5	35.5	38.4	28.8	18.6	28.9	34.9	31.6	30.3	13.0
South	31.2	35.2	32.4	40.0	39.8	22.6	27.7	31.0	33.3	27.7	13.2
West	28.8	31.7	31.5	36.6	32.5	18.3	26.0	26.4	26.0	31.0	16.7
Marital status											
Currently married	29.7	32.0	37.3	36.6	31.1	18.2	27.5	34.1	28.3	27.3	13.1
Formerly married	34.0	43.7	53.5	49.6	49.7	24.5	30.2	50.8	43.7	39.6	14.2
Never married	28.1	29.8	27.9	38.0	36.0	23.8	26.0	25.9	35.9	21.4	9.2
Employment status											
Currently employed	32.1	33.8	32.7	37.0	32.0	20.0	30.0	30.1	31.0	30.1	14.4
Unemployed	42.2	46.7	47.5	50.9	43.6	*13.3	37.4	39.6	39.0	31.4	*11.4
Not in labor force	24.9	25.7	20.0	51.2	37.2	19.5	24.6	33.2	30.5	29.5	13.4

¹ Includes persons with unknown sociodemographic characteristics

Note: Denominator for each cell excludes unknowns. Data are based on household interviews of the civilian noninstitutionalized population.

* Relative standard error greater than 30%.

Source: National Center for Health Statistics, C.A. Schoenborn, "Health Promotion and Disease Prevention: United States, 1985," Vital and Health Statistics, Series 10, No. 163, Department of Health and Human Services Pub. No. (PHS) 88-1591, U.S. Government Printing Office, Table 22, p. 39.

Table 35

Prevalence rates of current smoking among three Hispanic groups in the HHANES by sex and income*

Sex and income group	Mexican American	Percent +SE	Puerto Rican	Percent +SE	Cuban American	Percent +SE
Men						
< \$10,000	55.0	1.8	52.8	4.6	42.2	5.1
10,000+	39.6	2.3	34.0	3.1	42.0	3.0
Women						
< \$10,000	29.8	1.7	31.8	3.3	27.8	4.6
10,000+	21.4	1.3	28.6	2.4	23.6	1.4

* Rates are weighted to reflect the values that would occur if the entire population had been studied. Standard errors were calculated using the SESUDAAN program (18).

Source: Suzanne G. Haynes, Clair Harvey, Henry Montes, Herbert Nickens, and Bernice H. Cohen, "Patterns of Cigarette Smoking Among Mexican Americans, Puerto Ricans and Cuban Americans Aged 20-74 Years in the U.S. : Results from the Hispanic Health and Nutrition Exam Survey, 1982-84," American Journal of Public Health (in press).

Table 36

Percent of persons 18 years of age and over who were 20 percent or more above desirable body weight, by sex, age, and selected characteristics: United States, 1985

Characteristic	Both sexes 18 years and over	Male					Female				
		Total	18-29 years	30-44 years	45-64 years	65 years and over	Total	18-29 years	30-44 years	45-64 years	65 years and over
All persons ¹	24.0	25.9	15.6	28.6	34.9	24.3	22.3	12.4	21.2	31.0	26.8
Education level											
Less than 12 years	30.7	28.5	16.5	32.5	36.0	25.2	32.5	18.0	30.8	42.0	33.1
12 years	24.3	27.0	16.1	33.0	36.5	25.1	22.2	12.6	23.6	30.7	22.9
More than 12 years	19.3	23.5	14.8	24.6	32.6	21.7	14.8	9.8	15.5	19.7	18.0
13-15 years	19.9	23.5	15.1	27.5	33.1	22.1	16.6	11.9	18.5	20.2	20.0
16 years or more	18.7	23.4	14.3	22.4	32.2	21.3	12.5	5.9	12.7	19.1	14.9
Family income											
Less than \$10,000	26.0	20.7	11.6	29.1	29.4	24.1	29.2	14.7	38.8	42.7	29.7
\$10,000-\$19,999	25.9	26.2	17.4	28.0	39.0	24.3	25.6	14.7	27.3	36.5	28.0
\$20,000-\$34,999	23.8	27.0	18.8	29.4	32.7	27.3	20.4	11.5	20.6	29.2	24.8
\$35,000-\$49,999	22.3	28.2	14.6	29.2	37.7	22.4	16.1	8.2	16.6	22.8	14.0
\$50,000 or more	19.6	25.9	12.5	24.5	34.2	28.7	12.7	8.0	9.6	19.3	*13.2
Race											
White	23.5	26.4	16.3	29.3	35.3	23.6	20.8	11.6	19.5	28.4	25.3
Black	30.8	24.8	12.5	27.0	36.1	31.0	35.5	19.2	35.6	54.5	43.8
Hispanic origin											
Hispanic	23.3	23.4	15.5	28.3	32.3	*19.2	23.2	15.9	22.7	33.6	33.5
Non-Hispanic	24.0	26.1	15.7	28.6	35.1	24.4	22.1	12.0	21.1	30.7	26.5
Geographic region											
Northeast	24.3	26.8	17.3	27.1	34.9	27.2	22.1	9.4	21.0	31.1	29.1
Midwest	25.2	27.6	16.4	32.3	37.9	23.0	23.1	13.5	21.9	31.1	28.6
South	25.2	26.9	15.5	30.9	36.1	24.5	23.8	14.0	23.5	33.0	26.5
West	19.9	21.4	13.0	22.0	29.4	21.5	18.6	11.4	16.3	27.3	21.3
Marital status											
Currently married	26.1	30.1	20.3	30.7	36.6	25.4	22.1	13.5	19.8	30.4	24.5
Formerly married	26.1	21.3	14.6	19.0	26.3	20.7	28.0	17.1	25.3	31.9	28.9
Never married	15.2	15.2	12.9	22.3	27.0	*17.5	15.2	10.4	28.3	35.5	23.9
Employment status											
Currently employed	23.5	27.0	16.4	28.9	36.3	26.4	19.2	11.1	19.4	27.8	30.7
Unemployed	22.4	22.3	16.8	25.5	31.6	*17.8	22.5	18.8	26.1	28.0	*13.9
Not in labor force	25.1	23.1	9.3	23.5	30.2	23.9	26.0	13.8	25.0	34.9	26.5

¹ Includes persons with unknown sociodemographic characteristics.

Note: Denominator for each cell excludes unknowns.

* Relative standard error greater than 30%.

Data are based on household interviews of the civilian noninstitutionalized population.

Source: National Center for Health Statistics, C.A. Schoenborn, "Health Promotion and Disease Prevention: United States, 1985," Vital and Health Statistics, Series 10, No. 163, Department of Health and Human Services Pub. No. (PHS) 88-1591, U.S. Government Printing Office, Table 3, p. 20.

Table 37

Median daily nutrient intake* by race, sex, and age, United States, 1987

Nutrient	Age	White (Non-Hispanic)		Black (Non-Hispanic)		Hispanic	
		Males	Females	Males	Females	Males	Females
% Fat	18+	38.6	39.0	38.4	39.5	34.4	36.2
	18-24	38.5	39.0	38.8	40.9	35.2	38.0
	25-34	38.5	39.6	38.8	40.5	34.3	36.5
	35-44	38.9	39.6	37.4	38.3	33.9	36.3
	45-64	38.8	38.9	38.0	37.9	34.2	35.1
	65+	38.3	37.9	38.3	37.8	34.9	33.5
Fiber (g)	18+	10.4	8.1	10.4	8.0	13.9	9.6
	18-24	11.1	7.0	11.5	8.4	15.3	9.5
	25-34	10.7	7.8	11.3	7.7	15.9	10.0
	35-44	9.7	7.8	9.8	7.7	12.2	9.9
	45-64	10.1	8.6	9.2	8.1	12.2	9.9
	65+	10.6	8.6	9.1	8.2	13.0	8.5
Fiber/1000 Kcal	18+	5.5	6.4	5.3	5.8	6.5	6.7
	18-24	4.5	4.9	5.0	4.7	5.5	5.8
	25-34	5.0	5.5	4.9	5.0	6.4	6.4
	35-44	5.3	6.2	5.2	6.0	6.5	7.0
	45-64	5.9	7.2	5.7	6.9	7.1	7.8
	65+	7.1	8.0	6.3	7.3	8.0	7.7

By race, persons 18 years of age or older

Nutrient	All races	Whites & Blacks (Non-Hispanic)	Hispanic
% Fat	38.5	38.8	35.4
Fiber (g)	9.2	9.1	11.5
Fiber/1000 Kcal	5.9	5.9	6.7

* Estimates are weighted to reflect U.S. Census population estimates for 1987.

Source: Department of Health and Human Services, "Cancer Statistics Review 1973-1986," National Institutes of Health Pub. No. 89-2789, May 1989, Table II-16, p. II.44.

Table 38

Awareness of a relationship between diet and cancer * by race and level of education, United States 1987

Race/level of education	Aware before prompt ** (%)	Aware after prompt *** (%)	Unaware after prompt *** (%)
All Races			
Grades 0-6	15.4	32.2	52.3
Grades 7-11	26.5	29.1	44.4
High School Graduate	39.3	26.9	33.8
College (Any)	50.3	26.2	23.4
Whites			
Total	41.5	26.4	32.1
Grades 0-6	16.6	31.7	51.6
Grades 7-11	27.1	28.2	44.7
High School Graduate	40.3	26.4	33.3
College (Any)	51.7	25.1	23.2
Blacks			
Total	31.7	32.2	36.1
Grades 0-6	13.6	35.8	50.6
Grades 7-11	25.6	32.7	41.7
High School Graduate	32.3	30.2	37.5
College (Any)	42.8	33.8	23.5

* Estimates are weighted to reflect U.S. Census population estimates for 1987.

** Item from 1987 Supplement: Which major diseases do you think may be related to what people eat and drink? (Respondent specified cancer without prompt.)

*** Item from 1987 Supplement: Do you think cancer may be related to what people eat and drink?

Source: Department of Health and Human Services, "Cancer Statistics Review 1973-1986," National Institutes of Health Pub. No. 89-2789, May 1989, Table II-23, p. II.50.

Table 39

Consumption of any dietary supplement* by race, sex, and category of intake frequency**, United States 1987

Race/Sex	Consumption (%)	
	Anytime in past year	Every month daily
All Races	51.2	23.2
Whites (Non-Hispanic)	52.7	24.3
Males	45.5	20.0
Females	59.2	28.1
Blacks (Non-Hispanic)	40.9	16.0
Males	35.3	14.1
Females	45.3	17.6

* Estimates are weighted to reflect U.S. Census population estimates for 1987.

** Placement of subjects into frequency categories is based upon intake of the most frequently consumed supplement.

Source: Department of Health and Human Services, "Cancer Statistics Review 1973-1986," National Institutes of Health Pub. No. 89-2789, May 1989, Table II-19, p. II.47.

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A. Introduction**1. Overview of Findings**

Researchers have documented definite, persistent problems in reproductive health relating to racial and ethnic subpopulations in the United States. Poor birth outcomes, such as infant deaths, low birthweight, and others are found at relatively high levels in the Black population. Available data for the Hispanic and American Indian minorities present a more mixed picture, with some indicators favorable, and others not.

In 1987, more than 38,000 infant deaths were recorded in the U.S. Infant mortality is highest among Blacks—17.9 per 1,000 live births in 1987. For Whites, the 1987 infant mortality rate was 8.6; for all minority races as a group, it was 15.4. The overall infant mortality figure for American Indians and Alaska Natives in Reservation States is 9.7, based on 1984–86 data, but when measured separately, the rate for Alaska Natives is unusually high. Available records indicate that infant mortality among U.S. Hispanics, at 7.9, compares favorably with rates among non-Hispanic Whites. Some Asian-American groups, including Chinese, Japanese, and Filipino, have unusually low infant mortality rates, ranging from 4.0 to 4.7 (1986 data).

Low birthweight (less than 2,500 grams), the strongest risk factor for infant mortality, is most frequently found in Black newborns (12.7 percent of live births among Blacks in 1987), followed by Filipinos (7.3 percent), Hawaiians (6.6 percent),

Japanese Americans (6.3 percent), American Indians, Aleuts, and Eskimos (6.2 percent), Whites (5.7 percent), and Chinese Americans (5.0 percent). Available data for Hispanics suggest that a relatively low proportion of infants, 6.2 percent, were of low birthweight in 1987. However, the proportion of low birthweight Puerto Rican babies was 9.3 percent. In addition to an unusually high proportion of low birthweight babies, Black women also have much higher rates of preterm births (less than 37 weeks' gestation). For Black women, the proportion of births that were preterm was 18.0 percent in 1987, compared to 8.5 percent for White women. Preterm birth also occurs relatively often among Hispanic women, although the proportion, 11.0 percent of births, is well below that of Black women. Data for 1984—when rates of preterm births were lower than in 1987 (e.g., 7.9 percent for Whites and 16.8 percent for Blacks)—show that preterm births were also relatively common among American Indians (10.9 percent) and Alaska Natives (12.3 percent).

Mothers at the extremes of age in the childbearing years tend to experience the most problems in terms of infant mortality and morbidity as well as maternal complications. Fertility rates are higher among minority races as a whole, but the race differences in fertility are largest for those very age groups that experience the greatest risk of health problems for mother and infant. Among women aged 15 to 19 years in 1987, the

birth rate was 120 percent higher for minorities than Whites. It was 140 percent higher among Black women age 15 to 19 than among White women in the same age group.

Several maternal characteristics that can lead to poor birth outcomes, such as low educational attainment, high parity, and being unmarried, are more common in disadvantaged groups. For example, in 1987, nonmarital births were one-sixth of births to White women, compared to five in eight births to Black women. About one-third of births to Hispanic women were out of wedlock. Some adverse birth outcomes can be avoided by behavior changes on the part of pregnant women, such as avoiding alcohol, cigarettes, and illicit drugs (and certain other drugs with medically useful indications). Fetal alcohol syndrome, the result of inappropriate use of alcohol during pregnancy, appears to be substantially more frequent among American Indians than Whites, and an excess among Blacks also exists, though to a smaller degree than among American Indians. Maternal use of cocaine and heroin can also be detrimental to the health and life of children exposed before birth, with use of these drugs more common among poor minorities.

Birth defects vary by race in overall frequency, and specific birth defects are more likely in some race groups than others. The highest total rate of congenital malformations in

1981–86, considering 18 major ones including fetal alcohol syndrome, occurred among American Indians (222.0 per 10,000 total births), followed by Whites (189.8), Blacks (179.9), Asians (157.8), and Hispanics (144.4).

National statistics on maternal mortality in 1987 show that maternal deaths are 2.4 times as frequent among minority mothers as among White mothers. In 1987 the rate of maternal death per 1,000 live births among Black mothers alone was nearly three times the White rate. In 1984–86, American Indians in Reservation States had a maternal mortality rate at least 50 percent higher than the national White rate for comparable years.

Ectopic pregnancy is an obstetric complication currently on the increase, and Black women are 40 percent more likely than White women to experience it. Not only is the incidence relatively high, but Black women with an ectopic pregnancy have a risk of dying from it 3.5 times higher than White women.

There is little difference in fecundity, a measure of the ability to conceive and bear a child, but rates of infertility among married couples exhibit a race difference. In 1982, excluding surgically sterilized couples, married Black women age 15 to 44 were 55 percent more likely to be infertile than White women of reproductive age. Infertility treatment has been used less frequently by Black women.

Black women exposed to the risk of an unintended

pregnancy, regardless of marital status, are somewhat less likely to use contraception than White women. In other respects, contraceptive practices do not differ very much between Whites and Blacks. Blacks and Whites in 1982 were almost equally likely to rely on surgical sterilization for birth control.

Data for 1983 on pregnancy rates and pregnancy outcomes indicate that minorities experience more pregnancies compared to Whites, but relatively more are unwanted, as indicated by the higher proportions of pregnancies terminated by abortion.

2. Data Sources and Their Limitations

Measures of reproductive successes and reproductive problems are commonly used as indicators of the overall well-being of a population. Some measures indicative of reproductive well-being are found in vital statistics in industrialized countries. Infant and maternal mortality are the measures most often used because they are clearly defined, generally reliably reported, and routinely available. In the United States, mortality data have been recorded for many years, so that overall trends and patterns are easily assessed. Notwithstanding the strengths of the infant mortality data in use in this country, they lose precision when data are needed for racial/ethnic subpopulations. Infant death rates computed from birth cohort studies are considered more reliable than routinely available infant mortality data, because cohort studies rely on matched birth and death

certificates. Fewer errors in classifying race and ethnicity occur. However, cohort data are not as easily developed as the annual data.

In addition to infant and maternal deaths, reproductive problems can be measured by adverse birth outcomes such as malformations and low birthweight. Less commonly used measures concern infant and maternal morbidity, and risk factors, such as substance abuse, for adverse birth outcomes or illness in the mother.

Still other possible measures of reproductive problems concern not mortality, morbidity, or risk factors, but derangements of the reproductive process. These include, but are not limited to, rates of infertility, spontaneous abortion, dysfunctional pregnancies (such as ectopic pregnancies), and excess pregnancies. Excess pregnancies may be reflected in such indicators as rates of induced abortion, adolescent pregnancy, and infant abandonment. Several of these measures are reviewed in this chapter.

To facilitate comparisons of subpopulations, vital statistics generally incorporate racial or ethnic identifiers that allow for classification of individuals. In much of the recent research on infant or maternal mortality, race and ethnicity classifications are used simultaneously, resulting in four mutually exclusive groups: White, Black, Hispanic, and "Other." (1) (See Chapter I for further description of this classification.) Because vital statistics originate at non-federal governmental levels, data on other variables such as mother's education and marital status are also widely available but not universally so. As a result, some

measures in this chapter are based on reporting from a subset of the 50 states.

The most recent national statistics on maternal alcohol use were collected as part of the 1982 National Survey of Family Growth (NSFG).

Therefore, the section on maternal alcohol consumption relies primarily on large data sets measuring the incidence of fetal alcohol syndrome (FAS) and on national survey results pertaining to drinking behavior among U.S. adults.

Some in-depth analyses of birth outcomes reported in this chapter have attempted to hold constant simultaneously such factors as maternal characteristics, health habits, parity, and prenatal care initiation, as well as other possible causes of poor infant outcomes. This method enables researchers to isolate the effect of race/ethnicity alone, as well as to assess the relative importance of the various correlates of infant mortality. Some of the research serves to highlight the role of interactions of variables in birth outcomes—i.e., patterns in which the impact of the risk factors depends on the racial, ethnic, or other sociodemographic group in question. Generally these studies have not used national statistics. They tend to rely instead on statewide samples, birth/death linked state records, or hospital or insurance group data sets. These studies are presented throughout this chapter.

This chapter begins by presenting data pertaining to infant mortality, birth defect incidence, low birthweight, and preterm birth. Data showing the prevalence by race/ethnicity of the risk factors for poor birth

outcomes are then reviewed. Subsequent sections present data on maternal mortality; infertility, contraception, and abortion; and access to health services for pregnant women.

B. Infant Mortality

In national vital statistics reports, infant mortality is measured as an annual rate: the number of deaths in a given year among children less than one year old per 1,000 live births in that year. The neonatal mortality rate is defined as the number of children who die at or before 27 days postpartum, per 1,000 live births. Postneonatal deaths are infant deaths occurring more than 27 days postpartum but within the first year of life. The majority of infant deaths occur during the neonatal period. In 1987, 6.5 of the 10.1 infant deaths per 1,000 live births occurred during the neonatal period (Table 1). Fetal deaths are deaths *in utero* with a gestational age of at least 20 weeks.

1. Infant Mortality Rates

The national infant mortality rate of 10.1 per 1,000 live births is based on data for 1987, the most recent year for which detailed statistics are available (Table 1). Infant mortality is much lower for Whites than for Blacks. For Whites, the rate that year was 8.6. For Blacks, the infant mortality rate in 1987 was 17.9.

With respect to individual minority groups, vital statistics for Hispanics, Asians, and Native Americans seem to indicate that, on the whole, each of these groups has an infant mortality rate similar to or lower than the rate for Whites. However, there are reasons to believe that the vital statistics data underestimate infant mortality for Hispanics, Native Americans, and Asians.

The Hispanic infant mortality rate shown in Table 2 is from the U.S. vital statistics system, based on records from 18 states and the District of Columbia, jurisdictions which account for about 80 percent of the Hispanic population in the United States. (2) Overall, the Hispanic infant mortality rate for 1987 shown by these statistics is 7.9, compared to 8.4 for the White non-Hispanic population in the same jurisdictions. (2)

It has been suggested that undocumented out-of-hospital births and deaths are a likely cause of underestimation of the Hispanic infant mortality rate, and of the percentage of low birthweight babies as well. (3) Commenting on a study of pregnancy outcomes among Spanish-surname women in California, a state with a large Hispanic population (overwhelmingly Mexican American), Kleinman writes: "[T]he apparently favorable birthweight distribution and mortality experience of Latino women in California despite their unfavorable socioeconomic characteristics could possibly be the result of unreported infant deaths. Specific studies on this issue need to be based on field work outside the hospital and the vital statistics system." (3)

At 9.7, the 1984-86 infant mortality rate among American Indians and Alaskan Natives residing in Reservation States is lower than the national average of 10.6 for 1985 (Table 3). This rate masks substantial differences between American Indians and Alaska Natives; in 1985 the infant mortality rate was 9.3 for the former and 14.6 for the latter group. (4) Again, these data

are from U.S. vital statistics and are thought to be underestimates. Results from the 1983 National Birth Cohort Study suggest this rate is underestimated by 26 percent. (5)

Asian subpopulations appear to have the lowest infant death rates in the U.S., ranging from 4.0 among Japanese Americans to 6.5 among Asians other than Chinese, Japanese, or Filipino (Table 4). The National Birth Cohort Study suggests underestimation of these rates is 28 percent for Chinese, 39 percent for Japanese, 51 percent for Filipinos, and 61 percent for other Asians. (5) This implies actual infant mortality rates of 6.5, 6.6, 8.8, and 16.7 for these groups, respectively.

The first set of national health objectives, which were targeted for achievement by 1990, include an infant mortality rate of no more than nine per 1,000 live births. "Based on progress to date, achievement of this objective is questionable," according to a mid-course assessment issued by the Public Health Service in 1986. (6) In fact, the objective has been reached among American Whites, and perhaps among Hispanic Americans as well, but for American Blacks, as of 1987, infant mortality was approximately twice the target level. Moreover, as the next section indicates, the rate of decrease in infant mortality nationally appears to be slowing, and the slowdown has affected Blacks more severely than others.

2. Trends in U.S. Infant Mortality Data

Data for the years shown in Table 1 suggest a substantial decline over the past 37 years in the infant mortality rate. The increase in total and Black infant mortality between 1950 and 1960 may be an

artifact of improved reporting practices. (3) However, throughout this period, the rate for Blacks has been substantially higher than that for Whites, and since 1960 Black infant mortality has remained approximately twice as high as White.

Within the last decade, the downward trend in infant mortality began to slow; the average annual compound rate of decline was 3.3 percent between 1981 and 1984, down from 4.5 percent between 1968 and 1981. (7) The slowdown actually began in the late 1970s for White infants, and in 1981 for Black infants. (8) Since 1960, improvements in neonatal mortality have been greater for Whites than for Blacks, while improvements in postneonatal mortality have been greater for Blacks than for Whites. (8) More recently however, between 1986 and 1987, infant mortality, neonatal mortality, and postneonatal mortality have declined significantly among Whites only. Thus, while infant mortality rates improved among Whites, they remain very high among Blacks. While this observation for one year cannot be construed as a trend, it warrants monitoring of these data over the next few years.

3. International Comparisons

The overall U.S. infant mortality rate does not reflect the lowest rate that could be expected with current knowledge and technology. In a ranking of infant mortality rates for 36 selected nations for 1985, the U.S. ranks 22nd (Table 5). This is virtually the same position the United States had in 1980. Even

among several of the countries with higher ranks, the decline in infant mortality between 1980 and 1985 has proceeded faster than in the United States. The lowest infant mortality rate, and one of the highest rates of decline, is found in Japan (rate of 5.5 and an average annual decrease of 6.0 percent). The rate for Black Americans in 1985 was 18.3, which was comparable to that of Costa Rica which ranked 32nd of the 36 countries.

4. Causes of Infant Deaths

The leading cause of infant mortality in the U.S. population is congenital anomalies, which was responsible for approximately one in five infant deaths (Table 6). For the 10 leading causes of infant mortality, death rates for Black infants were much higher than for White infants. Black infant mortality resulting from short gestation and unspecified low birthweight is 3.9 times as high as for White infants; death rates from pneumonia and influenza are 2.6 times as high, and death rates from intrauterine hypoxia and birth asphyxia are 2.5 times as high. In fact, Black infant mortality rates are at least twice as high as White infant mortality rates for all principal causes except for congenital anomalies and for complications of placenta, cord, and membranes. However, the rank order of causes of infant death differs somewhat for Whites and Blacks. In 1987, the three leading causes of death among Black infants were each responsible for about 1,500 Black infant deaths. These causes were disorders relating to short gestation and unspecified low birthweight, congenital anomalies, and sudden infant death syndrome (SIDS). (2) For

Whites, there was a clear hierarchy of the three leading causes of infant mortality: congenital anomalies was the leading cause of death, followed by sudden infant death syndrome and, last, disorders relating to short gestation and unspecified low birthweight.

Congenital malformations are not only the leading cause of infant mortality, but they are also responsible for a considerable portion of childhood morbidity in the U.S. population. One indication of the burden of birth defects on U.S. children is that approximately 30 percent of admissions to pediatric hospitals are related to birth defects. (9)

In the population as a whole, there has been little change in recent years in the incidence of five important anomalies shown in Table 7. The most frequent anomaly is ventricular septal defect (see Table 8 for definitions of defects), which occurs at a rate of 19.5 per 10,000 total births.

The Centers for Disease Control, (10) using data for 1981-86 from 1,236 hospitals representing 21.1 percent of all U.S. annual births, has collected information on rates and patterns of congenital malformations. This effort, known as the Birth Defects Monitoring Program (BDMP), reviewed 4,617,613 births, obtaining specifics on race or ethnicity for 92.6 percent of the births from the medical records. As shown in Table 8, the frequencies of specific birth defects, as well as the total frequency, differ among U.S. racial and ethnic minority groups. The highest total rate occurred among American Indians (222.0 per 10,000 total births), followed by Whites (189.8), Blacks (179.9), Asians (157.8), and Hispanics (144.4).

Regarding specific malformations, Blacks have a higher rate of patent ductus arteriosus compared to Whites (an 88 percent difference in rates). Other Black and White differences were found for pulmonary artery stenosis (260 percent) and microcephaly (129 percent). Hispanics have higher rates of Down syndrome (a 36 percent rate difference), anencephaly (47 percent), and microcephaly (33 percent), when compared to Whites. American Indians tend to have higher rates of cleft palate (a 100 percent rate difference), cleft lip (80 percent), and valve stenosis and atresia (126 percent). Whites have an increased risk for hypospadias (a rate difference of 33 percent), cleft lip and cleft palate (122 percent and 54 percent, respectively), and Down syndrome (32 percent) when compared with the Black population. Asians have an increased risk for anencephaly (a 47 percent rate difference) and Down syndrome (33 percent) and other autosomal abnormalities excluding Down syndrome (32 percent). (10)

One limitation of the birth defects data set is that, although it is large, the cases were not taken from a random sample of U.S. hospitals. Some of the participating hospitals may have had an unusually high or low proportion of high-risk pregnancies. Especially if such hospitals also had disproportionate representation of minorities, the measured proportions of births with defects could be biased. Nonetheless, the authors concluded, "The

importance of monitoring congenital malformations by race and ethnicity has been demonstrated, and notable differences in the overall distribution of these anomalies have been identified." (10)

The second leading cause of infant death and the leading cause of postneonatal death, (11) SIDS is an important health problem not only among Black infants but also among Native Americans. In 1984-85, the estimated average annual years of potential life lost (before age 65) due to SIDS was 151 per 1,000 births for Blacks and 140 for Native Americans (American Indians, Aleuts, and Eskimos), whereas it was 81 for Whites and only 48 for others, including Chinese, Japanese, Hawaiians, Filipinos, and others. (12) Perhaps only one quarter of the Black and White difference in SIDS mortality rates is due to the higher incidence of low and very low birthweights among Blacks. Analyses by the Centers for Disease Control suggested that, for both weight groups, moderate low birthweight and very low birthweight, the SIDS rates for Blacks were three times that for Whites. High rates of births to teenage mothers and lower socioeconomic conditions are thought to play a role in the excess of SIDS among Blacks. (13)

Adams (1985) found that, when compared to White Alaskan residents, there was a near threefold greater incidence of SIDS deaths among Alaskan Native infants (American Indian and Eskimo) during the period 1976-80 (6.28 per 1,000 for Alaskan Native vs. 2.14 for Whites). (14) This occurred despite the groups' similar rates of low birthweight, single mothers, and rural residence.

Adams concluded from the research that additional data are necessary to explain etiologic differences between Alaska Natives and Whites. (14)

C. Low Birthweight and Preterm Infants

Prior to the 1960s, low birthweight babies had high probabilities of dying. With advances in neonatal intensive care, survival rates of low birthweight and preterm babies have improved dramatically. While the advances have been most significant in infants weighing 1,500 to 2,500 grams, infant mortality for very low birthweight infants has also decreased markedly. An Office of Technology Assessment study found that mortality for 1,001- to 1,500-gram infants decreased from 50 percent in 1961 to 10 percent in 1985. For infants weighing less than 1,000 grams at birth, infant mortality decreased from 90 percent to about 52 percent. (15)

However, surviving low birthweight and preterm babies often suffer handicaps which require costly immediate intensive care, long-term intensive care, and/or intermittent care for special problems. These handicaps include severe and moderate mental retardation; cerebral palsy of significant degree; major seizure disorders; blindness; severe hearing defects; and behavioral, learning, and language disorders. (15) Thus, low birthweight and preterm births are not only risk factors for infant mortality, but can be considered outcomes in and of themselves, with concomitant health consequences.

Throughout the discussion on the low birthweight

findings, it is important to consider the influence of resuscitation decisions. Labeling a very low birthweight fetus as a live birth that died may depend on how decisions are made to resuscitate very low birthweight infants, and whether deaths at very low birthweight are reported as fetal deaths or infant deaths.

1. *Current Differentials and Time Trends in Low Birthweight*

Nativity data for 1987 show that 6.9 percent of all live births were of low birthweight (less than 2,500 grams, or 5.5 pounds) (see Table 9). Blacks exhibited the highest proportion of low birthweight infants of all racial/ethnic groups, 12.7 percent; Filipino infants had the next-highest frequency of low birthweight, 7.3 percent; Hawaiians, Japanese, and American Indians (including Aleuts and Eskimos) followed, with 6.6 percent, 6.3 percent, and 6.2 percent, respectively; Whites had below-average proportions of low birthweight infants, 5.7 percent; and Chinese Americans had the lowest frequency, 5.0 percent.

National Center for Health Statistics (NCHS) 1987 birthweight statistics according to Hispanic vs. non-Hispanic origin are based on reporting from 23 states and the District of Columbia (Table 9). These reporting areas represent more than 90 percent of all Hispanic-origin births in the United States. (16) Overall, 6.2 percent of infants were of low birthweight, a proportion slightly lower than the national average. Among Puerto Rican infants, however, the proportion of low birthweight babies was 9.3 percent. As noted earlier, some researchers believe

Hispanic low birthweight rates are underestimated.

The proportion of low birthweight among Black births has held at about twice that for White births over nearly two decades. But during that time period, the differential in the ratio of Black to White proportions of low birthweight infants has increased slightly, from about 2.0 to 2.2 (see Table 10).

2. *Trends in Very Low Birthweight Births*

Closer examination of the weight distribution of low weight births shows that the numbers of the most serious low birthweight infants appear to be increasing (see Table 11). Nationally, the proportion of very low birthweight (VLBW) infants (less than 1,500 grams) rose 8 percent between 1980 and 1987 (1.15 percent of live births to 1.24 percent). The fraction of very low (less than 1,500g) birthweights among Whites dropped about 5 percent in the decade of the 1970s, but has climbed back nearly to the 1970 rate in the 1980s. The fraction of very low birthweights among Blacks has increased somewhat erratically throughout the 1970 to 1987 time period for a net increase of about 14 percent. Among Asian and Pacific Islanders, the fraction of very low birthweights dropped about one-third in the same time period. Overall, since 1970 the fraction of very low birthweights for the entire population has increased about 6 percent, but all of this increase has occurred in the 1980s. As of 1987, the fraction of low birthweights among Blacks was 2.9 times that for White births (Table 11). The Asian/Pacific fraction was slightly lower than for Whites, while

the American Indian fraction was slightly higher.

Risk factors for low birthweight include the mother's age, parity (total previous and current live births), marital status, and education. In an analysis of the contribution of changes in these risk factors to the trends in VLBW and moderately low birthweight, Kleinman and Kessel (17) found that one-third of the 13 percent increase in VLBW between 1973 and 1983 among Black mothers could be attributed to unfavorable changes in these risk factors. The contribution of unfavorable changes in marital status was especially large.

3. *Maternal Weight Gain and Birthweight*

One significant influence on birthweight is the mother's weight gain during pregnancy. Table 12 illustrates the relationship between a mother's weight gain and her infant's birthweight, based on data from the 1980 National Natality Survey (NNS). For both Whites and Blacks, the mother's weight gain influences the baby's weight gain; mothers with less than 16 pounds of pregnancy weight gain have babies that are over-represented in the under-2,500-grams birthweight category. Although most of the low birthweights in either race occurred with pregnancy weight gains of more than 16 pounds (77 percent for Whites, 71 percent for Blacks, derived from Table 12), a somewhat higher proportion of Black mothers who gave birth to babies below 2,500 grams gained less than 16 pounds (29.4 percent) compared to White mothers (23.3 percent). But a higher proportion of Black

mothers who gave birth to greater than 2,500-gram babies also gained less than 16 pounds (18.7 percent for Blacks, 9.8 percent for Whites) (see Table 12). Thus, pregnancy weight gain seems to explain only a modest part of the Black and White differences in low birthweights.

Nevertheless, smaller weight gain among Black women is a factor in the lower birthweights of their infants. Table 13 shows that weight gain of less than 16 pounds was twice as common in Black women than White women in 1980. NNS data further suggested that lower-income women, women of lower educational attainment, teenage mothers, mothers 35 years and over, high-parity women, and unmarried mothers gained less weight than others in pregnancy. (18) Thus, inadequate maternal weight gain appears to be part of the explanation for the higher incidence of low birthweight in Black infants and the infants of other disadvantaged groups.

4. *Studies of Infant Mortality Risk in Relation to Birthweight*

Detailed cohort data on infant mortality in relation to birthweight reveal racial patterns that are in some ways unexpected. The most recent data, for 10 weight groups, come from the National Infant Mortality Surveillance (NIMS) project, which linked birth and death records for the U.S. cohort born in 1980 (see Table 14). The NIMS project revealed that the deleterious effects of low birthweight extend beyond the critical initial four weeks of life. The data also

show that birthweight-specific neonatal death rates of White low birthweight infants (less than 2,500 grams) exceed the death rates for Black infants. For birthweights above 2,999 grams, however, the birthweight-specific death rates for Black infants exceed that for Whites. Birthweight-specific *postneonatal* mortality rates for Black infants exceed those for White infants in all birthweight groups. Part of the explanation for this pattern may be that in the postneonatal age group, adverse social and environmental conditions associated with poverty exert their effects more strongly than in the neonatal group, among whom medical care alone may have a larger role weight in determining outcomes. (11)

It is this infant mortality differential in the "normal" birthweight range that poses special significance. Binkin et al., who studied low birthweight in Whites, Blacks, U.S.-born Hispanics, and Mexican-born Hispanics in the California birth cohort of 1981-83, found that "the overall excess in Black infant mortality was due to the combination of higher rates of low birthweight among Blacks and to considerably higher birthweight-specific mortality in infants weighing 2,500 grams or more." (19) (20) Further, infants of Mexican-born Hispanic women experienced higher neonatal mortality than Whites in all birthweight categories, not just the low birthweight ones.

In a study of low birthweight that used data from a large health maintenance organization in California, period of gestation

was included along with many other possible factors explaining the racial/ethnic differential in low birthweight, but the Black and White disparity was found to persist. (21) Shiono et al. took into account maternal smoking, alcohol use, gender of the infant, gestational age, parity, trimester in which prenatal care began, and maternal weight for height, among other things. The results of the analysis were that a higher rate of low birthweight among Blacks persisted after accounting for possible race differences in the biological, behavioral, and social factors. By studying women who were enrolled in a health care plan, racial/ethnic differences in adequacy of prenatal care—a possible explanation for persisting birthweight disparities—are not as likely as in some other studies. However, the possible contribution of many other factors which were not included in the study remains unexplored.

With regard to Native Americans, the neonatal risk of death for Native American infants with birthweights greater than 4,000 grams was 2.6 times that for Whites, according to Vanlandingham et al. (22) The risk for postneonatal infant mortality at birthweights greater than 2,500 grams was 3.6 times that for Whites. The most common causes of death for Native American infants were sudden infant death syndrome (3.5 times the White risk) and infections (6.2 times the White risk).

5. *Preterm Birth*

Low birthweight is often a result of preterm birth—that is, birth prior to 37 completed weeks of gestation. Preterm birth itself is also an independent risk factor for mortality among infants of

normal weight. (23) Nearly two in five (38.9 percent) babies born preterm were of low birthweight in 1987, compared with 3.0 percent of the babies born at 37 weeks' gestation or longer. (16) Premature births are currently on the increase. In 1987, 10.2 percent of births were preterm, (16) compared to 10.0 percent in 1986, 9.8 percent in 1985, and 8.9 percent in 1980. (24)

As with low birthweight, the highest percentage of premature delivery occurs among Black women. American Indian, Hispanic, and some groups of Asian or Pacific Islander women have intermediate percentages, followed by White women (see Table 9). Chinese and Japanese women are least likely to have preterm births.

The proportion of preterm births among Black women increased each year from 1985 to 1987—from 17.5 percent in 1985 to 18.0 percent in 1987. (24) The proportion of White preterm births also rose, from 8.2 percent to 8.5 percent. Between 1986 and 1987, the Black and White disparity in preterm births increased. (16) Among Hispanic births 11.0 percent were preterm in 1987, representing an increase of 0.2 percentage points over the 1986 percentage. Subgroups of Hispanic births display variation in prematurity, ranging from 12.6 percent among Puerto Rican births to 8.9 percent among Cuban Americans.

Based on 1984 data, preterm births were 11 percent of total births among American Indians (Table 15). However, Alaska Natives had a somewhat higher percentage than the group

average, 12.3 percent (Table 15). (In that year, the White rate of preterm births was 7.9 percent, and the Black rate was 16.8 percent.)

Reducing preterm births would undoubtedly improve low birthweight rates, especially among Black women. However, national data indicate that the Black and White birthweight disparity is only partly due to differences in preterm births. Black infants are more likely to be of low birthweight than Whites at every gestational age. Among preterm births, the proportions with low birthweight were 42.1 percent and 37.9 percent for Black and White infants, respectively, in 1987. "It is among the term and postterm infants, however, that the racial differential in low birthweight is so substantial. In 1987, among term and postterm babies, the proportions weighing less than 5 pounds 8 ounces (2,500g) were 2.5 percent for White births and 5.8 percent for Black births. Because the vast majority of babies are born at term or later (90 percent in 1987), the racial disparity in low birthweight among these births has a significant impact on the overall differential in low birthweight between White and Black births." (16)

The causes of preterm birth are complex, and research on the minority/White differential has resulted in conflicting findings. When the risk factors for preterm birth were held constant in a large-scale study of pregnant women in California, women in minority racial/ethnic groups still experienced higher rates of preterm and very preterm (gestation less than 33 weeks) babies. (25) Another study found the opposite results; a large hospital-based study in

Massachusetts found no racial difference after accounting for other causes of preterm births. Conducted at the Boston Hospital for Women from 1977 to 1980, (26) the study investigated the association among race, socioeconomic variables, maternal hematocrit, and spontaneous preterm labor.

D. Risk Factors Associated with Infant Mortality

Risk factors for infant mortality and morbidity include live birth order (first and third or higher); maternal characteristics, including advanced maternal age as well as young age (especially adolescent pregnancy); low educational attainment, and marital status; maternal substance abuse; and late initiation of prenatal care. As the following section indicates, Black women are more likely than certain other minority groups to bear children under these unfavorable conditions.

1. Mother's Age, Marital Status, Interval Between Births, and Educational Attainment

Several studies described above analyzed birth outcomes in relation to race and other characteristics of the mother that are related to infant mortality. Among these other characteristics are very young and very advanced maternal age, nonmarital childbearing, short intervals between births, and low educational attainment.

1.1. Maternal age

Compared to women between the ages of 20 and 34, very young mothers—that is, women giving birth while still in their early and mid-

teens—and women bearing children at age 35 and over, experience more maternal complications, as well as increased infant mortality and morbidity. The neonatal mortality rate is especially high at the extremes of the childbearing years. Compared with an overall neonatal national mortality rate of 8.5 in 1980, for mothers under age 15 the rate was 21.9, and for mothers age 40 to 44 it was 10.6. (7)

Table 16 shows that Black and White differences in birth rates tend to be highest in mothers around the beginning and end of their childbearing years. For example, in 1987, Black teenagers 15 to 19 years old were 140 percent more likely than their White counterparts to bear a child; in contrast, for women age 25 to 39, birth rates are essentially equal for Black and White women. But, as with other data in this chapter, such as the weight gain statistics, poor birth outcomes are still more likely for Blacks, regardless of the mother's age. For example, the 1987 low birthweight rates for women 25 to 29 (the most favorable age group nationally for avoiding low birthweight) were 5.1 percent and 12.5 percent for Whites and Blacks, respectively. (16) In that year, 7.7 percent of births to White women age 15 to 19 were low birthweight compared to 13.1 percent of births to Black women in the same age group. (16)

Table 16 also indicates that the actual rates of adolescent pregnancy and childbearing are down sharply from their 1970 levels. Among Black women age 15 to 19, the rates declined by 29 percent and among White women of the same age, the rate of adolescent pregnancy declined by 22 percent between 1970 and 1980.

Trends since 1980 for Blacks and Whites in this age group suggest a continuation of the decline for Whites but a possible stabilization for Blacks. (16)

Nonetheless, the United States has one of the highest rates of adolescent pregnancy of the developed countries. In a review of the literature on risk factors associated with adverse neonatal outcome among pregnant adolescents, McAnarney concluded that adolescent pregnancy risks relate to poor nutrition, increased substance abuse, and increased frequency of genital infections. (27) Less access to prenatal care contributes to adolescent mothers' poor medical status; these women have the lowest rates of public or private health insurance to cover medical costs. (28) Aside from poor birth outcomes, other problems of teen pregnancy stem from the difficult conditions likely to prevail in families in which a parent is single, has not completed high school and, consequently, lives in poverty. (29) The groups with low proportions of teenage childbearing also tend to have relatively high proportions of college graduates. (24) (Further discussion of utilization and access to prenatal care may be found in Section G of this chapter and Chapter III, Prevention.)

Data for several ethnic subgroups within the minority category reveal substantial racial variations in the distribution of births by the age of the mother. Notably, as stated by the NCHS,

"Childbearing by teenage mothers is extremely rare for Chinese and Japanese women (1 and 3 percent,

respectively) and relatively uncommon for Filipino and other Asian or Pacific Islander women as well (6 percent). By contrast, 15 percent of Hawaiian mothers and 19 percent of American Indian mothers were under 20 years of age. The comparable proportions for White and Black women were 10 and 23 percent, respectively." (16)

Thus, the average birth rate among all minority teenagers masks the low rate of teenage childbearing among minority groups who are small in number.

Childbearing data by Hispanic origin reveal important subgroup differences. "Teenage childbearing is relatively common among Mexican and Puerto Rican women. Mothers under 20 years accounted for 17 percent to 21 percent of Mexican and Puerto Rican births compared with nine percent of White non-Hispanic births and 23 percent of Black non-Hispanic births. Births to teens are relatively uncommon among Cuban mothers (6 percent) and Central and South American mothers (8 percent)." (16)

1.2. Marital status

In addition to age, and often related to age, marital status is a second maternal risk factor for high infant mortality and low birthweight. Out-of-wedlock births often involve young women, whose infants, as we have seen, experience a relatively high risk of mortality and morbidity. (It should be noted, however, that the age distribution of all unmarried mothers has been shifting upward. In 1980, 24 percent of out of wedlock births were to women age 25 and over; by 1987, the proportion was

31 percent. (16)) Even after taking the mother's age into account, infants of unmarried mothers still have a high likelihood of facing health problems. Out-of-wedlock childbearing may affect infant health because of the stress involved. Another possible reason is that such births often occur to women of lower socioeconomic status.

The 1987 national percentage of out of wedlock births is 24.5 percent, compared to 18.4 percent in 1980 and 10.9 percent in 1970 (Table 11). More than three in five (62.2 percent) births among Black women in 1987 were nonmarital, compared to more than two in five (44.9 percent) among American Indians, and one in six among Whites (16.7 percent). (The proportions of births out of wedlock among American Indians do not appear to differ appreciably for the two subgroups American Indians and Alaska Natives; see Table 15). Asians and Pacific Islanders had the lowest proportion of out of wedlock births, about one in 10 (11.5 percent in 1987) (Table 11). The proportion among Whites tripled between 1970 and 1987, and among American Indians, it doubled.

Hispanic women, like Black and American Indian women, give birth out of wedlock with greater frequency than the national average. In 1987, almost one out of three births (32.6 percent) to Hispanic women were out of wedlock (Table 17). One Hispanic subgroup, Cuban Americans, has a 1987 rate of nonmarital births (16.1 percent) similar to non-Hispanic Whites (13.9 percent).

1.3. Birth spacing and parity

Inappropriate birth spacing is another recognized maternal risk factor for poor infant health. For example, in 1986 babies born within one year of the mother's previous birth were three to five times as likely to be of low birthweight than babies born after a two-year interval. (24) In 1987, 18 percent of Black babies, compared with 11 percent of White babies, were born within 18 months of the mother's previous birth (Table 18). A comparatively high percentage of babies, 16 percent, in race groups other than Black or White were born within 18 months of the previous birth.

A related measure in birth statistics is parity, which is the number of live births a woman has had. Particularly among disadvantaged groups, high parity may imply the existence of stressful family conditions, including the drain of childbearing on the mother, the adverse impact of high birth order on infants and young children, and the difficulties for a family in financially supporting many children. High parity is more common among certain racial minorities.

In 1987, the proportion of births that were fourth-order or higher among Whites was 8.7 percent (Table 19). In contrast, the proportion of such high-parity births among Blacks was 13.8 percent. Other groups with relatively high proportions of fourth-order or higher births were Hawaiians (14.1 percent), Filipinos (13.8 percent), Asians and Pacific Islanders not specified in Table 17 (15.0 percent), and American Indians and Alaska Natives (19.1 percent). Two Asian groups had relatively low proportions of high-parity births—Chinese (4.3 percent) and Japanese (4.5 percent).

Among Hispanic women, fourth- and higher-order births accounted for 15.5 percent of all births in 1987, but the subgroup rates by country of origin ranged widely, from 5.5 percent for Cuban mothers to 18.1 percent for Mexican mothers (Table 17).

1.4. Mother's educational attainment

Low birthweight has a persistent association with the mother's educational attainment. "The risk of low birthweight continues to be considerably less for babies born to better-educated mothers, regardless of race." (16) Mother's educational attainment is not only a direct risk factor for poor infant outcomes, it also has an indirect effect by virtue of its impact on use of prenatal care. (See Chapter III, Prevention, for further discussion of this.)

Minority women (with the exception of some Asian groups) tend to have less formal education than White women, as was discussed in Chapter II, Vital Statistics. Table 11 shows educational attainment of the mother for births occurring from 1970 to 1987. For all racial groups the percentages of births to mothers with less than 12 years of education declined over time, while the percentages with 16 years or more increased. However, the racial differential in mothers' educational attainment remains. In 1987 nearly one-third of births to Asian women were to mothers with 16 or more years of education. Nearly one-fifth of births to White women in that year were to women with 16 or more years of education. In contrast, only about 7 and 5 percent of Black and American Indian

births were to women who were similarly educated. These educational differences, then, help to explain some of the race disparities in birth outcomes.

2. Maternal Smoking, Alcohol, and Drug Use

The following subsections present data addressing racial/ethnic maternal behavioral differences in three areas—smoking, alcohol consumption, and illicit drug use. Further information regarding substance abuse can be found in Chapter IX, Mental Health.

2.1. Maternal smoking behavior

Data from the 1985 National Health Interview Survey (30), suggest only minor differences between White and Black women in smoking behavior during pregnancy. The major difference was among young White women age 18 to 24, of whom 45 percent smoked during a pregnancy compared with 23 percent of Black women in the same age group. Data from the 1982 National Survey of Family Growth also show little difference in the proportion of Blacks and Whites smoking during their most recent pregnancy. (31)

However, White women who smoked during pregnancy were about twice as likely as their Black counterparts to smoke heavily (15 or more cigarettes per day). (32) Among unmarried Whites, pregnant women were 40 percent more likely to smoke than their nonpregnant counterparts, according to data from the Behavioral Risk Factor Surveillance System. (33) By contrast, among married Whites and among married and unmarried Blacks, the prevalence of smoking was

lower among pregnant women than among nonpregnant women.

Hispanic women tend to have a low smoking prevalence in general, and in 1982 the percentage of Hispanic women who reported smoking during pregnancy was about one-third lower than the non-Hispanic percentage.(32) Kleinman and his associates, who studied smoking effects on infant mortality in Missouri using data from more than 365,000 births from 1979-83, concluded that complete elimination of smoking "will not narrow the Black-White gap in pregnancy outcome." (34)

Education and income account for most of the variation in smoking behavior (see Chapter III, Prevention). Using data from the 1980 National Natality Survey, Kleinman and Madans estimated that elimination of smoking among White married women age 20 to 34 would reduce the frequency of low birthweight by 11 percent among Whites with at least a high school education, and by 35 percent among Whites with less education than that. (35) It has been estimated that if all pregnant women stopped smoking, fetal and infant deaths would decrease by approximately 10 percent. (36)

3. *Alcohol Consumption and Fetal Alcohol Syndrome*

Fetal alcohol syndrome (FAS) is the "most common known teratogenic cause of mental retardation in the Western world." (37) From the results of 19 epidemiological studies, Abel and Sokol have the estimated incidence of FAS at 1.9

cases per 1,000 live births. (38) Not all cases of FAS exhibit mental retardation, but FAS is commonly diagnosed based partly on its presence. (39) Other manifestations of fetal alcohol syndrome may range from relatively mild to severe.

According to the Centers for Disease Control Birth Defects Monitoring Program, the 1981-86 rate of FAS per 1,000 total births (both live and stillbirths) was 29.9 in American Indians, 6.0 in Blacks, 0.9 in Whites, 0.8 in Hispanics, and 0.3 in Asians. (10)

Hispanic women, who have a low FAS rate, tend to abstain from alcohol, compared to other major ethnic groups (see Chapter III). On the other hand, American Indian women, who have the highest FAS rate, tend to have high rates of alcohol abuse. The extent of alcohol abuse among American Indian women may be suggested by the fact that they account for nearly half of all liver cirrhosis deaths in the American Indian population. (40)

Cultural values, as well as diagnostic biases, may account for some of the excess rates of FAS among American Indians and Blacks, but the data nonetheless strongly suggest that these two disadvantaged groups are disproportionately affected. The extent to which the high FAS incidence is a direct reflection of excess rates of alcohol abuse is unclear. Although all documented cases of FAS have been the offspring of women who reported abusive drinking, (41) "the frequency of FAS and alcohol-related birth defects is much lower than the frequency of abusive drinking among pregnant women." (39) The weakness of this relationship between drinking and FAS suggests

that alcohol interacts with other factors to produce FAS. Elucidating this issue with epidemiological data is complicated by the unavoidable use of self-reported drinking behavior to measure alcohol exposure. (42)

For these and other reasons, available data on drinking behavior and on alcoholism and alcohol abuse (see Chapter IX) do not seem entirely consistent with the FAS differentials found in the limited data available. Briefly summarized, the data suggest that both male and female Blacks are more likely to abstain from alcohol when compared to Whites. (32) The 1982 NSFG data indicated that White women were 47 percent more likely to report drinking during their most recent pregnancy than Black women. However, NSFG data suggest that Black women with high-risk pregnancies by virtue of such indicators as low educational attainment and low income were more likely than their White counterparts to drink heavily (once a week or more) during pregnancy. For example, among women who did not complete high school, Blacks were more than twice as likely as Whites to drink once a week or more. (32) It is not known whether the higher Black incidence of FAS is caused by elevated risk among women with these characteristics.

4. *Maternal Drug Abuse*

The proportion of women of childbearing age (15 to 44) who are current users of illicit drugs rose during the 1980s, and was estimated to be five million in 1988. (43) Only one national survey of prenatal exposure to illicit drugs has been conducted. According

to that survey of 50 hospitals, an average of 11 percent of women were abusing illegal substances, with cocaine or crack as the drug of choice in 75 percent of cases. (44) Using these data, researchers estimate that each year, 375,000 newborns are exposed perinatally to at least one illegal drug. (45)

Notwithstanding the potentially devastating impact of maternal abuse of illicit drugs, relatively little research has been conducted on this problem. Abuse of prescription and illicit drugs, such as heroin, cocaine, marijuana, antidepressant drugs, methadone, and non-narcotic medications has been investigated in studies of hospital patients or drug-treatment populations. (46) (47) (48) Based on these studies, scientific knowledge of the specific consequences, such as birth defects, of illicit drug use in pregnancy is developing, though it is still at an early stage. Findings of serious adverse outcomes associated with maternal abuse of marijuana, the most widely used illicit drug, have been inconclusive. (49) As with all studies of maternal drug use, methodological and measurement difficulties have impeded demonstration of drug effects in such studies. (42) (29) (50)

Codependencies (use of more than one type of drug) make it difficult to measure separately the effects of individual substances. Questionnaire design can also strongly influence the self-reporting of drug use in pregnancy. (51)

Low birthweight has been repeatedly associated with use of heroin and methadone. (42) Heroin, which is more commonly used among poor Blacks (see Chapter IX), has been shown to produce severe ill effects in perinatally exposed children. (52) (53)

Crack cocaine use is more prevalent among Blacks and Hispanics than Whites, (54) and their adverse fetal effects are being demonstrated. In an investigation of cocaine, Chasnoff et al. found that the infants of cocaine-using mothers (with or without other drugs) had significantly lower birthweight, increased prematurity, and increased incidence of intra-uterine growth retardation (IUGR), and of *abruptio placentae* than the infants of non-drug-using mothers or mothers who used multiple drugs other than cocaine. (55) The findings of increased IUGR, prematurity, and low birthweight have been supported by other studies. (56) (57) Thus, potential harm from prenatal exposure to cocaine appears to be great.

Although more studies of the epidemiology of drug use among pregnant women are clearly warranted, the growing evidence on adverse birth outcomes strongly suggests that illicit drug use may contribute to high rates of infant mortality, Sudden Infant Death Syndrome (SIDS), mental retardation, and other measures of reproductive failure among disadvantaged groups. Anecdotal reports indicate that the problem may be getting worse, at least in some areas. In the District of Columbia, a sharp rise in infant mortality between 1987 and 1988—from 19.6 to 23.2—has been attributed to increased drug abuse among pregnant women. (58) The group most likely to be experiencing this problem is poor Black women.

5. Initiation of Prenatal Care

Infant mortality increases with later initiation of prenatal care in a pregnancy, and is highest for infants whose mothers had no prenatal care. The 1980 NIMS project

linking infant birth and death records found that, among infants weighing at least 2,500 grams, infant mortality was 2.8 times higher without prenatal care than with care initiated in the first trimester, and it was twice as high when care began in the third trimester. (59) When prenatal care commenced in the second trimester, infant mortality was 1.5 times higher. The effects of inadequate prenatal care were similar for Blacks and Whites. (59)

Table 11 shows that in 1987, Blacks were more than twice as likely as Whites to have late (third trimester) or no prenatal care (11.1 percent vs. 5.0 percent), and the frequency of late or no care among American Indians was at least as high as that for Blacks—11.7 percent. Only 5.8 percent of Asian and Pacific Islander mothers delayed or did not obtain prenatal care.

Table 17 presents the proportions of Hispanic mothers with late or no prenatal care in 1987, in comparison to non-Hispanic White and non-Hispanic Black mothers. Overall, 12.7 percent of Hispanic mothers had late or no care, while only 4.1 percent of non-Hispanic White mothers did. Non-Hispanic Black mothers had late or no care in 11.6 percent of cases. Within the Hispanic population, the percentages range widely, from 3.9 percent of Cuban mothers to 17.1 percent of Puerto Rican mothers.

E. Maternal Mortality

Maternal mortality is measured in the vital statistics records as deaths due to "Complications of Pregnancy, Childbirth, and the Puerperium."

Maternal deaths have been declining in recent decades, as shown in Table 1, which reports rates since 1940. Decreases were extraordinarily large in the earlier decades. In recent years, progress has been slower, and not steady. Moreover, between 1950 and 1986 the risk of maternal death for the race groups in Table 1 remained, for minority races as a whole, about three times that of Whites, and for Black women, between three and four times that of Whites.

Racial differences in maternal mortality are even sharper than in infant mortality. National statistics show a maternal mortality rate of 6.6 per 100,000 live births for the total population in 1987 (Table 1). White mothers died at a rate of 5.1 per 100,000 live births, and all others (Blacks and Others) died 2.4 times as frequently—a rate of 12.0. Black mothers alone had a rate of 14.2, almost three times the White rate (Table 1). In 1984–86, the rate for Black mothers was closer to four times that of White mothers. American Indians in Reservation States had a maternal mortality rate in 1984–86 of 8.2—at least 50 percent higher than the White rate for comparable years (Tables 1 and 20).

National statistics on Hispanics are not available. Data from California, a state with a sizable Hispanic population, record 13 maternal deaths among Hispanic women in 1986, which amounts to 36.1 percent of the 36 maternal deaths reported for that year.

Maternal deaths are grouped into four major subheadings by the NCHS:

- 1) pregnancies with abortive outcome, which refers primarily to ectopic pregnancies, miscarriages, and

abortions, which may be complicated by infections, hemorrhaging, and other problems;

- 2) direct obstetric causes, including such problems as toxemia, embolism, and hypertension complicating pregnancy;
- 3) indirect obstetric causes, such as communicable diseases, diabetes, anemia, and cardiovascular diseases, all of which could complicate the pregnant state; and
- 4) delivery in a completely normal case.

Of the 251 maternal deaths in NCHS data for 1987, 192 were in category 2) "direct obstetric causes" (Table 21). The death rate for racial minorities in this category is 2.2 times higher than for Whites, and for Blacks it is 2.6 times higher. The other important category, 1) "pregnancies with abortive outcome," caused 44 deaths, of which 43 percent were among minority women.

Table 22 presents data related to maternal deaths from 1981 to 1985 in 19 reporting areas in the United States. During that period, the ratio of maternal mortality rates (per 100,000 live births) for minority women compared to White women was 2.7. (60) The largest discrepancies for Black and other women, compared with White women, were deaths from ectopic pregnancies, complications of anesthesia, and all types of abortion.

Despite increasing numbers of ectopic pregnancies between 1970 and 1985, the

actual case fatality rate has decreased—from 35.5 per 10,000 ectopic pregnancies in 1970 to 4.2 in 1985. (61) However, minority women with an ectopic pregnancy have a 3.5 times higher risk of dying from it than White women. For Black women, the ratio of ectopic pregnancy deaths per 100,000 live births in 1987 was four times the White rate. Ectopic pregnancy is thus responsible for one of the largest race disparities among the causes of maternal mortality in 1987. These measures of excess mortality from ectopic pregnancies contrast sharply with the 40 percent excess ratio of ectopic pregnancies among minority women reported for the period 1970–85.

Examined by age, the race difference in ectopic pregnancy death is greatest for teenagers. For the 16-year-period 1970–86, minority teenagers had the highest case fatality rate—42.0 deaths per 10,000 ectopic pregnancies, or 5.5 times higher than reported mortality for White teenagers, and 2.7 times higher than that for minority women age 25 to 29. (61)

The race disparities in maternal mortality appear to be related primarily to socioeconomic factors, inasmuch as many maternal deaths are preventable with modern medicine. The four leading causes of maternal mortality in 1987 were complications of the puerperium (conditions during the 42-day period following termination of pregnancy, such as infections, blood clots, and other problems related to healing following delivery), toxemia, hemorrhage, and ectopic pregnancy (Table 21). These conditions are considered largely preventable with

routine prenatal care and appropriate obstetric medicine.

The national health objective for maternal mortality states: "By 1990 the maternal mortality rate should not exceed five per 100,000 births for any county or for any ethnic group (e.g., Black, Hispanic, American Indian)." (6) The Public Health Service concluded in 1986 that "it appears unlikely that this objective will be met." (6) Only among Whites does this objective appear achievable, given the current level and recent trends in maternal mortality. The Public Health Service further noted that many of the same factors that keep infant mortality rates above the desired objectives are the same for maternal mortality, such as late or no prenatal care, inadequate referrals for low-income, high-risk women, and a continuing high rate of unintended pregnancies. In view of the preventability of many of these deaths, the 1990 objectives are not unreasonable, but it appears that they must await improved access to prepregnancy and prenatal care, and better-quality care, (62) among disadvantaged groups.

F. Impaired Fecundity, Contraception, and Abortion

Birth rates and fertility rates of disadvantaged racial/ethnic groups are higher than those of White women (see Table 16). At the same time, available data comparing Blacks and Whites show that significant numbers of Black women are more likely than their White counterparts to be burdened with fertility problems. Finally, minorities overall experience more

unwanted pregnancies than White women. The following discussion will review fertility problems, contraceptive use, abortions, and fetal loss.

1. Impaired Fecundity and Infertility

The most recent national survey to provide data on women's (or couples') difficulties in having children is the 1982 National Survey of Family Growth (NSFG). Impaired fecundity and infertility are two alternative measures used by the National Center for Health Statistics to describe difficulties in having children. In the 1982 NSFG, impaired fecundity was established if a survey respondent reported certain problems in conceiving or carrying a baby to term. Infertility was simply defined as failure to conceive within the preceding 12 months or longer, despite the absence of contraceptive measures. Infertility does not necessarily indicate permanent inability to have children; it is considered a screening device that identifies people who may benefit from fertility treatment. The definition of infertility tends to result in lower estimates of reproductive difficulties than impaired fecundity.

Impaired fecundity is a more useful measure than infertility. In the NSFG, women (or couples) without impaired fecundity or sterilization operations could fall into either one of two remaining categories: surgically sterile for noncontraceptive reasons or fecund (i.e., there is no known reason why attempts to have a baby would be unsuccessful).

The estimates of impaired fecundity show virtually no difference between Blacks and Whites (Table 23). For Whites and Blacks,

respectively, 8.5 percent and 8.6 percent of women had impaired fecundity. Another 17.9 percent and 14.8 percent, respectively, were contraceptively sterile. Nearly equal proportions of Whites (8.5 percent) and Blacks (8.6 percent) were surgically sterile for noncontraceptive reasons, leaving 65.9 percent and 69.3 percent, respectively, classified as fecund. The small fecundity difference is partly related to the higher percentage of White women who are contraceptively sterile.

Estimates of infertility, available for married couples only, exhibit a race difference (Table 24). In 1982, excluding all surgically sterile couples, the percentage of married Black women age 15 to 44 reporting infertility was 55 percent higher than the White percentage. Percentage differences are similarly substantial in each age subgroup in the table (58 percent for age 15 to 29 years and 44 percent for ages 30 to 44 years). Between 1965 and 1982, the younger age group in both races experienced increasing infertility, but this appears to be particularly serious among young Black couples, of whom 13.6 percent were infertile in 1982 compared to 4.8 percent in 1965.

According to the NCHS, "The causes of the higher percents infertile among young Black couples in 1976 and 1982 are unknown, but it has been shown that higher proportions of Black wives have had pelvic inflammatory disease (PID), a major cause of infertility. Two risk factors in PID have been shown to be higher in young Black than White women in the mid-1970s: use of the IUD, or intrauterine device, and gonorrhea." (31)

Medical treatment for infertility has been utilized by Blacks less frequently than by Whites who were interviewed in the 1982 NSFG. (In fact, this may contribute to the higher Black infertility percentages shown in Table 24.) Eighteen percent of the White women age 15 to 44 who have ever been married have sought help from a private doctor or public clinic for infertility or difficulty in conceiving, while 13.5 percent of Black women in the same age-marital status group have sought help. (63) Most women, Black or White, go to private physicians for help.

2. *Use of Contraception*

The most frequent users of contraception were White married women (93.9 percent), followed by Black married women (87.5 percent), White formerly married women (85.4 percent), White never married women (79.3 percent), Black formerly married women (78.5 percent), and Black never married women (73.2 percent). (64) "It is likely that irregular patterns of sexual intercourse contribute to the higher levels of nonuse among unmarried women". (64) Never married and currently married users of contraception were about equally likely to use one of the more effective methods, but never married women were more likely to use the pill, while sterilization was more common among the married. These differences are largely due to differences in age and previous childbearing experience. (65)

The 1982 NSFG interview data on contraceptive use indicated that currently married Black and White women age 15 to 44 exhibit

generally comparable patterns of contraceptive use, as do never married sexually active women of childbearing age (Table 25). In fact, differences in contraceptive practices are more obvious by marital status than by race.

As shown in Table 25, in 1982, the few important differences between Black and White women, regardless of marital status, were that Black women were more likely than White women to have female contraceptive sterilization operations, to be using the birth control pill, and to have had intercourse within the last three months without using contraception of any kind. When sterilization of the husband or partner is considered however, Whites were observed to be more likely than Blacks to rely on contraceptive sterilization; 6.7 percent of Whites reported male contraceptive surgical sterilization compared to less than one percent of Blacks. Therefore, Whites overall reported relatively more use of surgical sterilizations than Blacks (26.1 percent vs. 22.2 percent). White women were also more likely than Black women to have never had intercourse or to be using barrier methods other than foam (i.e., diaphragm or condom).

Table 25 also compares contraceptive practices of Hispanic and non-Hispanic women in 1982. It indicates that Hispanic women were considerably less likely than non-Hispanic women to rely on surgical sterilizations of either themselves or their husbands (18.4 percent vs. 26.3 percent). Another important difference is that Hispanic women were 2.8 times as likely as non-Hispanic women to use the intrauterine device.

Among married women there has been a decline in

use of oral contraceptives (Table 26). During the nine-year period 1973–82, use of the pill decreased sharply—by approximately 41 percent among currently married Black women and 47 percent among currently married White women. In place of the pill, in addition to sterilization, White married women now tend to use barrier methods (i.e., diaphragm, condom, and foam) more often than Black married women. These methods are less effective in preventing pregnancy than sterilizations, oral contraceptives, or the IUD, but they may present less health risk to users, and provide some protection against sexually transmitted diseases, including human immunodeficiency virus infection.

An important trend in contraception in recent years has been the rise to prominence of contraceptive sterilization, which is now the single most important form of contraception among married women of both races age 15 to 44 (Table 26). By poverty status, no difference in the use of surgical sterilization exists, contrary to findings of 1973, when surgical sterilization was associated with poor and near-poor couples. (64)

Contraceptive use data for women who have never been married but were exposed to the risk of an unintended pregnancy are shown in Table 27. A woman was classified as being exposed to this risk if she had intercourse in the last three months and was not pregnant, post partum, seeking pregnancy, or noncontraceptively sterile. For both Black and White unmarried women, teenagers

are less likely to be using birth control than are women over 20. In both age groups, Black females are somewhat less likely to use contraception. Among contraceptors, Black females are more likely to use the pill and the other more effective methods.

The foregoing statistics from the 1982 NSFG suggest that Black women, regardless of marital status, were less likely to use contraception than Whites. Differential access to family planning services may be part of the explanation for Black women's lower contraceptive use, although data are not available to substantiate such a disparity. Existing estimates of the percentages using family planning services pertain to married women, and show no statistically significant differences by race or Hispanic origin. (63) NSFG data for 1982 show relatively high rates of family planning visits per 1,000 women for Blacks compared to Whites, but this may well reflect Black women's greater reliance on contraceptive methods requiring prescriptions. (63) To the extent that minority groups have fewer contacts with physicians and others in the health care system who can provide family planning services, problems in obtaining access to birth control may well exist, and deserve further study. (See Chapter XII, Utilization of Health Services, for further information concerning physician visits.)

Bachrach found that family income is a factor in contraceptive use among sexually active women. Women with family incomes below 150 percent of the poverty line were somewhat less likely to be contraceptors than other women (82.4 percent vs. 89.9 percent). Similar differences were

found among never married and formerly married women, but married women in both income groups were nearly equally likely to use contraception. (64)

3. *Abortion and Fetal Loss*

Pregnancy incidence data for Whites and all other races show that relatively more pregnancies occur among minorities, but that the racial differential in pregnancy rates declined from 81 percent in 1976 to 68 percent in 1983 (see Table 28). Abortion rates among Whites and all others remained fairly stable between 1976 and 1983. Proportionately, more of the minority pregnancies are terminated by induced abortion. However, teenage minority women are somewhat less likely to have an induced abortion than are White teenagers, while young adult minority women are more likely than White women to do so (see Table 29). It should be noted that the number of abortions on which the data in Tables 28 and 29 are based may be undercounted by as much as 6 percent. (66) In addition to variation by race, the proportion of pregnancies terminated by abortion varies strongly by age—from approximately one-half of pregnancies among girls less than 15 years old to 18 percent for women age 30 to 34.

Table 29 also indicates that fetal loss was somewhat more common among minority women than among White women. Among minority women, 15.2 percent of pregnancies were lost, compared to 12.0 percent among White women. The unfavorable race differential

for minorities is almost entirely due to fetal losses occurring to minority women age 30 and over.

Research has found that single Black women are more likely to be sexually active while not using contraception, that Black women start intercourse at an earlier age, and that they delay using contraception longer after initiating sexual activity, compared to White women. (66) These factors are likely to result in more unintended pregnancies, as reflected in higher abortion rates.

The high abortion rates imply the need for more effective pregnancy planning nationally, with particular effort directed at helping young and disadvantaged women gain the knowledge and skills they need to control the occurrence and timing of pregnancies. Black women are 2.5 times as likely as White women to have a birth that is unplanned. (67) Better pregnancy planning would not only aid women in avoiding unwanted and unplanned pregnancies, but might also improve birth outcomes.

G. *Access to Health Care Services for Reproductive Health*

According to Congress's Office of Technology Assessment, the weight of scientific evidence is strong that prenatal care is efficacious in preventing low birthweight and neonatal mortality, two key reproductive outcomes discussed earlier in this chapter. (7) National data indicative of access to prenatal care come from estimates of health insurance coverage rates. The data show that access to medical care among women of childbearing age, as indicated by health insurance coverage, differs according to

the woman's race/ethnicity and income. Other types of barriers are also likely to hinder disadvantaged women in obtaining care.

1. *Financial Barriers to Obtaining Adequate Prenatal Care*

Studies of women's utilization of maternity care indicate that inability to pay for care is a leading reason for delay in seeking services or failing to obtain them at all prior to delivery. Fifteen studies reviewed by the Institute of Medicine found financial barriers, particularly inadequate or no insurance coverage and limited personal funds, to be the most important obstacle to careseeking among women receiving insufficient care. (68) A 1986–87 United States General Accounting Office (GAO) survey of prenatal care showed that 17 percent of the women with insufficient prenatal care cited lack of money as the most important explanation. (69)

Because health insurance coverage is critical in securing access to health care for most individuals, rates of coverage can be used as an indicator of access to care. In 1985, 17 percent of U.S. women age 15 to 44 were without private or public health insurance coverage, according to the Alan Guttmacher Institute. (70) Childbearing-age women were less likely to have health insurance coverage than the population at large. (71) Considering that many private policies exclude maternity care, the proportion of women uncovered for this purpose is considerably higher—25 percent, or more than 14 million women of childbearing age. Not surprisingly, several data

sources indicate that privately insured women are more likely to obtain appropriate prenatal care than women who are uninsured or poor. (47) (69) (72) As detailed in Chapter XII, Health Insurance Coverage and Health Care Expenditures, minority and low-income groups are less likely than the rest of the U.S. population to have public or private insurance coverage.

In 1986, Congress gave the states the option of expanding Medicaid's role in health care financing for pregnant women and children, but states have not moved quickly to realize the potential benefits of easing financial access to prenatal care, since expanding Medicaid coverage means additional expenditures by states to match the federal contribution. Under the current federal laws, states may provide Medicaid coverage to all infants and pregnant women with incomes up to 100 percent of the federal poverty level, but only 22 states have done so to date. (73)

2. *Additional Barriers to Obtaining Adequate Prenatal Care*

In addition to financial barriers to obtaining prenatal care, other barriers to access that are often cited in reports on the problem include a growing shortage of maternity care providers and provider unwillingness to take high-risk patients. (74) Also cited are inadequate transportation and child care, poorly located facilities, and "the systematic inadequacy of recruiting hard-to-reach women." (6)

The GAO survey of uninsured and Medicaid-covered women found that appreciable proportions of women obtaining intermediate or inadequate prenatal care cited the above-noted types

of reasons in addition to inability to pay. In general, the proportions citing these reasons were highest among the inadequate care group, followed by the intermediate care group, and then by the adequate care group.

Programs to address prenatal care barriers will have the greatest chance of

succeeding if they recognize that mainstream health education and promotion services often fail to reach racial/ethnic minorities in greatest need of the services. Minority groups in many instances maintain their own cultural beliefs, values, and social networks, often in highly cohesive local

communities. Programs may be ineffective if their content, communications channels, wording, and other characteristics are not tailored to suit the target population's educational and cultural background. This means that, as with any health promotion effort, programs to increase

utilization of prenatal care cannot merely translate messages designed for the majority population, but may need to be designed at the local level, and preferably with the assistance of the target community itself. (5)

Table 1

Infant, maternal, neonatal and postneonatal mortality rates, and fetal mortality ratios, by race: United States, 1950–1987

Type	1950	1960	1965	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987
Infant deaths ¹	20.2	26.0	24.7	20.0	16.1	12.6	11.9	11.5	11.2	10.8	10.6	10.4	10.1
White	26.8	22.9	21.5	17.8	14.2	11.0	10.5	10.1	9.7	9.4	9.3	8.9	8.6
Black & Other	44.5	43.2	40.3	30.9	24.2	19.1	17.8	17.3	16.8	16.1	15.8	15.7	15.4
Black	43.9	44.3	41.7	32.6	26.2	21.4	20.0	19.6	19.2	18.4	18.2	18.0	17.9
Maternal deaths ²	83.3	37.1	31.8	21.5	12.8	9.2	8.5	7.9	8.0	7.8	7.8	7.2	6.6
White	61.1	26.0	21.0	14.4	9.1	6.7	6.3	5.8	5.9	5.4	5.2	4.9	5.1
Black & Other	221.6	97.9	83.7	55.9	29.0	19.8	17.3	16.4	16.3	16.9	18.1	16.0	12.0
Black	223.0	103.6	86.3	59.8	31.3	21.5	20.4	18.2	18.3	19.7	20.4	18.8	14.2
Fetal deaths ³	19.2	16.1	16.2	14.2	10.7	9.2	9.0	8.9	8.4	8.2	7.9	7.7	NA
White	17.1	14.1	13.9	12.4	9.5	8.2	8.0	7.9	7.4	7.4	7.0	6.8	NA
Black & Other	32.5	26.8	27.2	22.6	16.0	13.4	12.8	12.7	12.2	11.5	11.3	11.2	NA
Neonatal deaths ⁴	20.5	18.7	17.7	15.1	11.6	8.5	8.0	7.7	7.3	7.0	7.0	6.7	6.5
White	19.4	17.2	16.1	13.8	10.4	7.5	7.1	6.8	6.4	6.2	6.1	5.8	5.5
Black & Other	27.5	26.9	25.4	21.4	16.8	12.5	11.8	11.3	10.8	10.2	10.3	10.1	10.0
Black	27.8	27.8	28.5	22.8	18.3	14.1	13.4	13.1	12.4	11.8	12.1	11.7	11.7
Postneonatal deaths	8.7	7.3	NA	4.9	4.5	4.1	3.9	3.8	3.9	3.8	—	—	—
White	8.7	7.3	NA	4.9	4.5	4.1	3.9	3.8	3.9	3.8	3.7	3.6	3.6
White	7.4	5.7	NA	4.0	3.8	3.5	3.4	3.3	3.3	3.3	3.2	3.1	3.1
Black & Other	16.9	16.4	NA	9.5	7.5	6.6	6.0	5.9	6.0	5.8	5.5	5.6	5.4
Black	16.1	16.5	NA	9.9	7.9	7.3	6.6	6.6	6.8	6.5	6.1	6.3	6.1

— Not available.

¹ Represents deaths of infants under 1 year old, exclusive of fetal deaths.

² Per 100,000 live births from deliveries and complications of pregnancy, childbirth, and the puerperium. Beginning 1979 deaths are classified according to the Ninth Revision of the International Classification of Diseases, for the earlier years classified according to the revision in use at the time.

³ Beginning 1970, includes only those deaths with stated or presumed period of gestation of 20 weeks or more; for prior years, includes gestational age not stated.

⁴ Represents deaths of infants under 28 days old, exclusive of fetal deaths.

Note: Deaths per 1,000 live births, except as noted. Prior to 1980, excludes Alaska and Hawaii. Beginning 1970, excludes deaths of nonresidents of U.S.

Sources: (1) U.S. Bureau of the Census. Statistical Abstract of the United States: 1989 (109th edition). Washington, DC, U.S. Government Printing Office, Table 113, p. 76, (2) National Center for Health Statistics. Advance Report of Final Mortality Statistics, 1987, Monthly Vital Statistics Report, Vol. 38, No. 5, Supplement, Sep 26, 1989, Department of Health and Human Services Pub. No. (PHS) 89-1120, Hyattsville, MD, Table 13, p. 30 and Table 16, p. 33.

Table 2

Infant, neonatal, and postneonatal deaths and mortality rates, by Hispanic origin and race for non-Hispanic origin: Total of 18 reporting States and the District of Columbia, 1987

Age	All origins	Hispanic					Non-Hispanic			
		Total	Mexican	Puerto Rican	Cuban	Other Hispanic ¹	Total ²	White	Black	Not stated ³
Number										
Under 1 year	20,386	2,952	1,854	259	24	815	15,807	9,965	5,201	1,627
Under 28 days	12,983	1,885	1,201	155	13	516	9,844	6,243	3,233	1,254
28 days-11 months	7,403	1,067	653	104	11	299	5,963	3,722	1,968	373
Rate										
Under 1 year	10.0 ⁴	7.9	7.6	7.3	7.5	9.2	9.8	8.4	16.5	
Under 28 days	6.3 ⁴	5.0	4.9	4.3	4.1	5.8	6.1	5.2	10.3	
28 days-11 months	3.6 ⁴	2.9	2.7	2.9	3.4	3.4	3.7	3.1	6.3	

¹ Includes Central and South American and other and unknown Hispanic.

² Includes races other than white and black.

³ Includes infant deaths that occurred in States that did not report Hispanic origin on the death certificate.

⁴ Figures for origin not stated included in All origins but not distributed among origin groups.

Note: Rates per 1,000 live births in specified group. Live births based on origin of mother.

Source: National Center for Health Statistics. Advance Report of Final Mortality Statistics, 1987. Monthly Vital Statistics Report Vol. 38, No. 5, Supplement, Sep 26, 1989, Department of Health and Human Services Pub. No. (PHS) 89-1120, Hyattsville, MD, Table 21, p. 40.

Table 3

Infant mortality rates* by age for American Indians and Alaska Natives in Reservation States, 1966–1986 and United States, all races, 1966–1985

Calendar year	Infant mortality rate	Neonatal				Postneonatal
		Total	Under 1 day	1–6 days	7–27 days	28 days 11 months
Indians and Alaskan Natives						
1984–1986	9.7	4.4	2.3	1.2	0.9	5.2
1983–1985	9.8	4.6	2.4	1.2	1.0	5.3
1982–1984	10.2	4.6	2.4	1.2	1.0	5.6
1981–1983	11.0	5.0	2.5	1.3	1.1	6.1
1980–1982	11.9	5.5	2.8	1.6	1.1	6.5
1979–1981	13.8	6.6	3.3	2.0	1.3	7.2
1978–1980	14.6	7.3	3.7	2.3	1.3	7.2
1977–1979	15.5	7.8	3.9	2.5	1.3	7.6
1976–1978	16.4	8.2	4.4	2.5	1.3	8.2
1975–1977	17.7	8.8	4.8	2.7	1.3	8.9
1974–1976	18.7	9.2	5.1	2.8	1.3	9.5
1973–1975	18.8	9.2	4.8	3.0	1.4	9.6
1972–1974	19.7	9.3	5.0	2.9	1.4	10.4
1971–1973	21.3	10.3	5.8	3.0	1.4	11.0
1970–1972	22.7	11.0	6.5	2.9	1.6	11.6
1969–1971	24.6	12.2	6.8	3.6	1.8	12.3
1968–1970	27.1	12.9	7.0	3.9	2.0	14.1
1967–1969	30.0	14.3	7.8	4.5	2.0	15.7
1966–1968	34.0	15.7	8.4	4.9	2.3	18.4
1965–1967	36.8	16.1	8.6	5.1	2.4	20.7
U.S. all races						
1985	10.6	7.0	4.0	1.8	1.1	3.7
1984	10.8	7.0	4.1	1.8	1.1	3.8
1983	11.2	7.3	4.3	1.9	1.2	3.9
1982	11.5	7.7	4.4	2.0	1.3	3.8
1981	11.9	8.0	4.5	2.3	1.3	3.9
1980	12.6	8.5	4.6	2.4	1.4	4.1
1979	13.1	8.9	4.8	2.7	1.4	4.2
1978	13.8	9.5	5.1	2.9	1.5	4.3
1977	14.1	9.9	5.3	3.1	1.5	4.2
1976	15.2	10.9	5.9	3.1	1.6	4.3
1975	16.1	11.6	6.3	3.7	1.6	4.5
1974	16.7	12.3	6.7	3.7	1.6	4.4
1973	17.7	13.0	7.2	4.2	1.5	4.7
1972	18.5	13.7	8.1	4.3	1.3	4.8
1971	19.1	14.2	8.2	4.6	1.4	4.9
1970	20.0	15.1	8.8	4.8	1.5	4.9
1969	20.9	15.6	9.2	4.9	1.5	5.3
1968	21.8	16.1	9.5	5.1	1.5	5.7
1967	22.4	16.5	9.6	5.3	1.6	5.9
1966	23.7	17.2	10.0	5.6	1.6	6.5

* Deaths under one year per 1,000 live births.

Source: Department of Health and Human Services. Indian Health Service, "Trends in Indian Health 1989." Table 3.7, p. 26.

Table 4

Asian infant mortality rates* in the United States, 1979 and 1986

Race group	Infant mortality rate	
	1979	1986
Chinese	5.9	4.7
Japanese	4.6	4.0
Filipino	3.8	4.3
Other Asians ¹	8.3	6.5

*Deaths under one year per 1,000 live births.

¹Includes deaths among Hawaiians and Part-Hawaiians.

Sources: (1) National Center for Health Statistics, Vital Statistics of the United States, 1979, Volume II, Mortality, Part A, Hyattsville, MD, and (2) National Center for Health Statistics, Vital Statistics of the United States, 1986, Volume II, Mortality, Part A, Hyattsville, MD.

Table 5

Infant mortality rates and average annual percentage change: 36 selected countries, 1980 and 1985

Country	Infant mortality rate		
	1980	1985 ¹	Average annual percent change
Infant deaths per 1,000 live births (rank)			
Japan	7.5 (2)	5.5 (1)	-6.0
Iceland	7.7 (4)	6.1 (2)	-4.6
Finland	7.6 (3)	6.3 (3)	-3.7
Sweden	6.9 (1)	6.8 (4)	-0.3
Switzerland	8.5 (7)	6.9 (5)	-4.1
Hong Kong	11.2 (13)	7.5 (6)	-7.7
Canada	11.9 (16)	7.9 (7.5)	-7.9
Denmark	8.4 (6)	7.9 (7.5)	-1.2
Netherlands	8.6 (8)	8.0 (9)	-1.4
France	10.0 (9)	8.3 (10)	-3.7
Norway	8.1 (5)	8.5 (11.5)	1.0
Spain	14.3 (22.5)	8.5 (11.5)	-9.9
Ireland	11.1 (12)	8.8 (13)	-4.5
Federal Republic of Germany	12.6 (19)	9.0 (14.5)	-6.5
Luxembourg	11.5 (14)	9.0 (14.5)	-4.8
Singapore	11.7 (15)	9.3 (16)	-4.5
Belgium	11.0 (10.5)	9.4 (17.5)	-3.1
United Kingdom	12.1 (17.5)	9.4 (17.5)	-4.9
German Democratic Republic	12.1 (17.5)	9.6 (19)	-4.5
Australia	11.0 (10.5)	9.9 (20)	-2.1
Italy	14.6 (24.5)	10.3 (21)	-6.7
United States	12.6 (20.5)	10.6 (22)	-3.4
New Zealand	12.6 (20.5)	10.9 (23)	-2.9
Austria	14.3 (22.5)	11.2 (24)	-4.8
Israel	15.1 (26)	11.9 (25)	-4.7
Malta	14.6 (24.5)	13.2 (26)	-2.0
Czechoslovakia	16.6 (27)	14.0 (27)	-3.3
Greece	17.9 (28)	14.1 (28)	-4.7
Bulgaria	20.2 (30.5)	15.4 (29)	-5.3
Cuba	19.1 (29)	16.5 (30)	-2.9
Portugal	23.9 (34)	17.8 (31)	-5.7
Costa Rica	20.2 (30.5)	18.3 (32)	-2.4
Kuwait	27.7 (35)	18.4 (33)	-7.9
Poland	21.3 (32)	19.2 (34)	-2.1
Chile	33.0 (36)	19.5 (35)	-10.0
Hungary	23.2 (33)	20.4 (36)	-2.5

¹ Data for Costa Rica are for 1984. Data for all other countries refer to 1985; of these, Belgium and Spain are provisional and all others are final.

Note: Rankings are from lowest to highest infant mortality rate based on the latest data available for countries or geographic areas with at least 200,000 population and with "complete" counts of live births and infant deaths as indicated in the United Nations Demographic Yearbook, 1985.

Source: National Center for Health Statistics. Health, United States, 1988. Department of Health and Human Services, U.S. Government Printing Office, Mar 1989, Table 19, p. 59.

Table 6

Deaths under one year and infant mortality rates* for the ten leading causes of infant death: United States, 1987

Rank order ¹	Cause of death (Ninth Revision International Classification of Diseases, 1975)	All infant deaths		Ratio of Black rates to White rates
		Number	Rate	
...	All causes,	38,408	1,008.2	2.1
1	Congenital anomalies, 740-759	7,884	207.0	1.1
2	Sudden infant death syndrome, 798.0	5,230	137.3	1.9
3	Disorders relating to short gestation and unspecified low birthweight, 765	3,354	88.0	3.9
4	Respiratory distress syndrome, 769	3,283	86.2	1.9
5	Newborn affected by maternal complications of pregnancy, 761	1,399	36.7	2.2
6	Accidents and adverse effects, E800-E949	950	24.9	2.0
7	Infections specific to the perinatal period, 771	862	22.6	2.2
8	Newborn affected by complications of placenta, cord, and membranes, 762	839	22.0	1.8
9	Intrauterine hypoxia and birth asphyxia, 768	791	20.8	2.5
10	Pneumonia and influenza, 480-487	674	17.7	2.6

¹ Rank based on number of deaths.

* Rates per 100,000 births.

Source: Compiled from National Center for Health Statistics. Advance Report of Final Mortality Statistics, 1987, Monthly Vital Statistics Report, Vol. 38, No. 5, Supplement, Sep 26, 1989, Department of Health and Human Services Pub. No. 89-1120, Hyattsville, MD, Table 14, p. 31; Table 15, p. 9 and p. 32.

Table 7

Incidence rates for five selected congenital malformations from 1982-1985

	1982	1983	1984	1985
Anencephalus	3.4	3.0	2.6	2.7
Spina bifida	5.1	4.7	5.0	4.5
Microcephalus	2.3	2.7	2.5	2.6
Ventricular septal defect	15.9	15.9	17.3	19.5
Down syndrome	8.5	8.2	7.7	9.7

* Rate per 10,000 births based on data from 1,187 U.S. community hospitals and representing 21% of U.S. births occurring from 1982 through 1985.

Source: Centers for Disease Control. Congenital Malformations Surveillance Report, Jan 1982-Dec 1985, issued Mar 1988, Table 2, pp. 10-18, Atlanta, GA.

Table 8

Rates of major congenital malformations, by race/ethnicity, United States: 1981–1986

Malformation*	Rates**				
	Blacks	Hispanics	American Indians	Asians	Whites
Anencephaly	2.1	4.4	3.6	4.4	3.0
Spina bifida without anencephaly	3.3	5.9	4.1	1.8	5.1
Hydrocephalus without spina bifida	8.1	4.6	10.8	4.8	5.4
Microcephalus	4.8	2.8	2.6	1.9	2.1
Ventricular septal defect	14.4	13.8	19.1	21.0	17.4
Atrial septal defect	2.1	1.2	4.1	2.5	2.1
Valve stenosis and atresia	5.9	1.9	8.2	2.8	3.2
Patent ductus arteriosus	49.9	20.7	33.5	25.1	26.5
Pulmonary artery stenosis	5.4	1.4	0	1.8	1.5
Cleft palate without cleft lip	3.7	3.7	9.8	4.6	5.9
Cleft lip with or without cleft palate	4.4	8.6	17.5	12.9	9.7
Clubfoot without CNS *** defects	19.9	19.1	15.5	14.4	27.5
Hip dislocation without CNS defects	13.8	24.0	31.4	25.0	32.3
Hypospadias	24.6	14.9	17.5	16.5	32.7
Rectal atresia and stenosis	2.8	3.0	4.6	3.8	3.7
Fetal alcohol syndrome	6.0	0.8	29.9	0.3	0.9
Down syndrome	6.5	11.6	6.7	11.3	8.5
Autosomal abnormalities, excluding Down syndrome	2.1	2.1	3.1	2.9	2.2
Total	179.9	144.4	222.0	157.8	189.8

* By organ and/or system.

** Per 10,000 total births.

*** Central nervous system.

Definitions of Malformations

Anencephaly—Absence of top and back of the skull and most of the brain, usually causing still birth or newborn death.**Spina bifida without anencephaly**—Longitudinal gap in the spinal column, with serious consequences (e.g., paralysis) when the spinal cord and nerve roots in the gap segment are malformed.**Hydrocephalus without spina bifida**—Expansion of the fluid-filled compartments within the brain, often at the expense of the brain tissue.**Microcephalus**—Very small brain, usually accompanied by mental retardation.**Ventricular septal defect**—Hole in the wall between the two main (lower) pumping chambers of the heart, often compromising heart efficiency.**Atrial septal defect**—Hole in the wall between the two auxiliary (upper) pumping chambers of the heart, often compromising heart efficiency.**Valve stenosis and atresia**—Absence or narrowing of a heart valve.**Patent ductus arteriosus**—Persistence of a heart-lung bypass vessel that is normal in the fetus, but that should begin to close immediately after birth for efficient heart-lung function.**Pulmonary artery stenosis**—Complete obstruction of the blood vessel(s) leading from the heart to the lungs.**Cleft palate without cleft lip**—Front-to-back cleft in the hard or soft palate or both (roof of the mouth), usually interfering with feeding and speech development.**Cleft lip with or without cleft palate**—Vertical cleft (single or double) in the upper lip.**Clubfoot with CNS defects**—Deformation of a (usually) fully developed foot and ankle.**Hip dislocation without CNS defects**—Dislocated or (more often) dislocatable hip joint, usually due to shallow socket.**Hypospadias**—Opening of the urethra in the base or shaft of the penis rather than at its tip.**Rectal atresia and stenosis**—Narrowing or complete impassability of the rectum.**Fetal alcohol syndrome**—A variable combination of mental deficiency, certain abnormal facial features, prenatal and subsequent growth retardation, and various physical malformations in offspring of women drinking heavily during pregnancy.**Down syndrome**—A variable pattern of mental retardation and physical abnormalities due to presence of an extra (third) copy of chromosome 21 (or a specific segment thereof) in all or, occasionally, some cells of the body.**Autosomal abnormalities excluding Down syndrome**—All other abnormalities in number or structure of any of the 22 nonsex chromosome pairs.Source: Centers for Disease Control. G.F. Chavez, J.F. Cordero, J.E. Becerra, "Leading Major Congenital Malformations Among Minority Groups in the United States, 1981–86," *Morbidity and Mortality Weekly Report* 1988, 37 (No. SS–3), Table 1, p.19.

Table 9

Percent of low birthweight infants and percent of preterm births by race and by Hispanic origin of mother and race of child for mothers of non-Hispanic origin: United States, 1987

Racial group	Percent of live births	
	Low birthweight infants*	Preterm births**
All races ¹	6.9	10.2
White	5.7	8.5
Black	12.7	18.0
American Indian ²	6.2	11.7
Asian or Pacific Islander		
Chinese	5.0	7.1
Japanese	6.3	7.9
Hawaiian	6.6	10.7
Filipino	7.3	10.4
Other	6.4	10.5
Origin of mother ³		
All origins ⁴	7.0	10.4
Hispanic, total	6.2	11.0
Mexican	5.7	11.0
Puerto Rican	9.3	12.6
Cuban	5.9	8.9
Central and South American	5.7	10.3
Other and unknown Hispanic	6.9	11.0
Non-Hispanic, total ⁵	7.1	10.3
White	5.6	8.2
Black	12.9	11.4

* Birthweight of less than 2,500 grams (5 lb. 8 oz.).

** Born prior to 37 completed weeks of gestation.

¹ Includes births of other races not shown separately.

² Includes births to Aleuts and Eskimos.

³ Data from 23 reporting states and the District of Columbia.

⁴ Includes origin not stated.

⁵ Includes races other than White and Black.

Sources: (1) Unpublished data from the National Center for Health Statistics, (2) National Center for Health Statistics. Advance Report of Final Natality Statistics, 1987, Monthly Vital Statistics Report, Vol. 38, No. 3. Supplement, Jun 29, 1989, Department of Health and Human Services Pub. No. (PHS) 89-1120, Hyattsville, MD, Tables 27, 29, & 32, pp. 39, 40, & 43.

Table 10

Percent of infants of low birthweight,* by race: United States, 1950-1987

Year	All races	White	All other races		Ratio of Black to White proportions of infants of low birthweight
			Total	Black	
1987	6.9	5.7	11.3	12.7	2.23
1986	6.8	5.6	11.2	12.5	2.23
1985	6.8	5.6	11.1	12.4	2.21
1984	6.7	5.6	11.1	12.4	2.21
1983	6.8	5.7	11.4	12.6	2.21
1982	6.8	5.6	11.2	12.4	2.21
1981	6.8	5.7	11.4	12.5	2.19
1980	6.8	5.7	11.5	12.5	2.19
1979 ¹	6.9	5.8	11.6	12.1	2.09
1978	7.1	5.9	11.9	12.9	2.19
1977	7.1	5.9	11.9	12.8	2.17
1976	7.3	6.1	12.1	13.0	2.13
1975	7.4	6.3	12.2	13.1	2.08
1974	7.4	6.3	12.4	13.1	2.08
1973	7.6	6.4	12.5	13.3	2.08
1972	7.7	6.5	12.9	13.6	2.09
1971	7.7	6.6	12.7	13.4	2.03
1970	7.9	6.8	13.3	13.9	2.04
1969	8.1	7.0	13.5	14.1	2.01
1968	8.2	7.1	13.7	—	—
1967	8.2	7.1	13.6	—	—
1966	8.3	7.2	13.9	—	—
1965	8.3	7.2	13.8	—	—
1964	8.2	7.1	13.9	—	—
1963 ²	8.2	7.1	13.6	—	—
1962 ²	8.0	7.0	13.1	—	—
1961	7.8	6.9	13.0	—	—
1960	7.7	6.8	12.8	—	—
1959	7.7	6.8	12.9	—	—
1958 ³	7.7	6.8	12.9	—	—
1957 ³	7.6	6.8	12.4	—	—
1956 ³	7.5	6.7	12.0	—	—
1955 ^{3, 4}	7.6	6.8	11.7	—	—
1954 ^{3, 4}	7.6	6.8	11.3	—	—
1953 ^{3, 4}	7.6	7.0	11.3	—	—
1952 ^{3, 4}	7.6	7.0	11.1	—	—
1951 ^{3, 4}	7.5	7.0	10.7	—	—
1950 ^{3, 4}	7.5	7.1	10.2	—	—

* Birthweight of less than 2,500 grams (5 lb. 8 oz.).

¹ Definition changed from under 2,501 grams (5 lb. 8 oz.).² Figures by race exclude data for residents of New Jersey.³ Excludes data for Massachusetts.⁴ Excludes data for Connecticut.

—Not available.

4Sources: For data prior to 1981: National Center for Health Statistics. Advance Report of Final Natality Statistics, 1980. Monthly Vital Statistics Report, Vol. 31, No. 8, Supplement. Department of Health and Human Services Pub. No. (PHS) 83-1120. All other data: National Center for Health Statistics. Advance Report of Final Natality Statistics, 1981. Monthly Vital Statistics Report Vol. 32, No. 9, Supplement. Department of Health and Human Services Pub. No. (PHS) 84-1120, Table 13, pp. 25-26; National Center for Health Statistics. Advance Report of Final Natality Statistics 1982, Monthly Vital Statistics Report Vol. 33, No. 6, Supplement, Sep 28, 1984, Department of Health and Human Services Pub. No. (PHS) 84-1120, Table 15, pp. 27-28; National Center for Health Statistics. Advance Report of Final Natality Statistics, 1983, Vol. 34, No. 5, Supplement 2; National Center for Health Statistics. Advance Report of Final Natality Statistics, 1984, Vol. 35, No. 4, Supplement; National Center for Health Statistics. Advance Report of Final Natality Statistics, 1985, Vol. 36, No. 4, Supplement, National Center for Health Statistics. Advance Report of Final Natality Statistics, 1986, Monthly Vital Statistics Report, Vol. 37, No. 3, Supplement Jul 12, 1988, Department of Health and Human Services Pub. No. (PHS) 88-1120, Table 15, pp. 28-29; National Center for Health Statistics. Advance Report of Final Natality Statistics, 1987, Monthly Vital Statistics Report Vol. 38, No. 3, Supplement, Jun 29, 1989, Department of Health and Human Services Pub. No. (PHS) 89-1120, Table 15, pp. 28-29.

Table 11

Percent of live births, by race of child and selected characteristics: United States, selected years 1970–1987

Race of child and characteristic	Percent of births									
	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987
All races										
Birth weight: ¹										
Less than 2,500 grams	7.94	7.39	6.84	6.81	6.75	6.82	6.72	6.75	6.81	6.90
Less than 1,500 grams	1.17	1.16	1.15	1.16	1.18	1.19	1.19	1.21	1.21	1.24
Age of mother:										
Less than 18 years	6.3	7.6	5.8	5.4	5.2	5.0	4.8	4.7	4.8	4.8
18–19 years	11.3	11.3	9.8	9.4	9.0	8.7	8.3	8.0	7.8	7.6
Unmarried mothers	10.7	14.3	18.4	18.9	19.4	20.3	21.0	22.0	23.4	24.5
Education of mother:										
Less than 12 years	30.8	26.6	23.7	22.9	22.3	21.7	20.9	20.6	20.4	20.2
16 years or more	8.6	11.4	14.0	14.8	15.3	15.9	16.4	16.7	17.1	17.6
Prenatal care began:										
1st trimester	68.0	72.4	76.3	76.3	76.1	76.2	76.5	76.2	75.9	76.0
3rd trimester or no prenatal care	7.9	6.0	5.1	5.2	5.5	5.6	5.6	5.7	6.0	6.1
White										
Birth weight: ¹										
Less than 2,500 grams	6.84	6.26	5.70	5.67	5.63	5.67	5.59	5.64	5.64	5.68
Less than 1,500 grams	0.95	0.92	0.90	0.90	0.92	0.93	0.92	0.94	0.93	0.94
Age of mother:										
Less than 18 years	4.8	6.0	4.5	4.3	4.1	3.9	3.7	3.7	3.7	3.7
18–19 years	10.4	10.3	9.0	8.6	8.2	7.9	7.4	7.1	6.9	6.8
Unmarried mothers	5.7	7.3	11.0	11.6	12.1	12.8	13.4	14.5	15.7	16.7
Education of mother:										
Less than 12 years	27.0	25.0	20.7	19.9	19.3	18.7	18.0	17.8	17.6	17.3
16 years or more	9.5	12.7	15.6	16.4	17.0	17.7	18.4	18.7	19.2	19.9
Prenatal care began:										
1st trimester	72.4	75.9	79.3	79.4	79.3	79.4	79.6	79.4	79.2	79.4
3rd trimester or no prenatal care	6.2	5.0	4.3	4.3	4.5	4.6	4.7	4.7	5.0	5.0
Black										
Birth weight: ¹										
Less than 2,500 grams	13.86	13.09	12.49	12.53	12.40	12.59	12.36	12.42	12.53	12.71
Less than 1,500 grams	2.40	2.37	2.44	2.47	2.51	2.55	2.56	2.65	2.66	2.73
Age of mother:										
Less than 18 years	14.7	16.1	12.2	11.4	11.1	10.9	10.6	10.3	10.4	10.5
18–19 years	16.6	16.8	14.3	13.9	13.5	13.4	13.1	12.7	12.4	12.1
Unmarried mothers	37.4	49.0	55.2	56.0	56.7	58.2	59.2	60.1	61.2	62.2
Education of mother:										
Less than 12 years	51.0	45.1	36.2	35.4	34.8	34.2	33.1	32.3	31.7	31.4
16 years or more	2.8	4.4	6.3	6.6	6.8	6.8	7.0	7.1	7.3	7.2
Prenatal care began:										
1st trimester	44.4	55.8	62.7	62.4	61.5	61.5	62.2	61.8	61.6	61.1
3rd trimester or no prenatal care	16.6	10.5	8.8	9.1	9.6	9.7	9.6	10.0	10.6	11.1
Asian and Pacific Islander ²										
Birth weight: ¹										
Less than 2,500 grams	8.43	7.04	6.55	6.61	6.63	6.51	6.53	6.11	6.38	6.3
Less than 1,500 grams	1.12	0.80	0.91	0.91	0.87	0.87	0.91	0.84	0.87	0.9
Age of mother:										
Less than 18 years	3.3	2.7	1.7	1.8	1.8	1.7	1.8	1.8	1.9	1.9
18–19 years	7.1	5.8	4.3	4.4	4.4	3.9	3.8	3.7	3.7	3.6
Unmarried mothers	7.8	8.5	7.8	7.5	8.4	9.0	9.6	10.1	10.6	11.5

Table 11

Percent of live births, by race of child and selected characteristics: United States, selected years 1970–1987—Continued

Race of child and characteristic	Percent of births									
	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987
Education of mother:										
Less than 12 years	21.7	18.5	20.0	21.9	22.2	20.7	19.3	18.5	17.3	17.3
16 years or more	20.0	27.5	30.2	29.0	28.9	29.7	30.2	30.1	31.1	31.6
Prenatal care began:										
1st trimester	67.8	73.9	74.7	74.4	74.4	74.9	75.6	75.0	75.6	75.7
3rd trimester or no prenatal care	6.8	4.5	6.1	6.2	6.2	6.1	6.0	6.1	5.9	6.0
American Indian ³										
Birth weight: ¹										
Less than 2,500 grams	7.99	6.61	6.47	6.27	6.17	6.43	6.16	5.88	6.16	6.24
Less than 1,500 grams	0.98	1.04	0.96	0.90	1.04	1.06	1.03	0.98	1.01	1.08
Age of mother:										
Less than 18 years	7.5	11.0	8.8	8.5	8.0	7.9	7.4	7.1	7.4	7.4
18–19 years	13.3	15.8	14.3	14.0	13.5	12.9	12.6	12.0	11.8	11.5
Unmarried mothers	19.8	27.9	33.5	35.2	36.3	38.7	39.8	40.7	42.3	44.9
Education of mother:										
Less than 12 years	57.6	50.6	41.8	40.7	39.5	38.8	38.0	36.9	36.8	36.6
16 years or more	3.0	2.8	4.2	4.4	4.5	4.3	4.5	4.6	4.6	4.5
Prenatal care began:										
1st trimester	41.7	49.3	58.7	59.3	60.5	59.7	60.0	60.3	60.7	60.2
3rd trimester or no prenatal care	25.6	19.5	13.3	12.9	12.4	12.7	12.4	11.5	11.6	11.7

¹ Before 1979, data are for infants weighting 2,500 grams or less at birth.² Includes Chinese, Japanese, Filipino, Hawaiian (includes part Hawaiian), Guamanian (1970 and 1975), and other Asian or Pacific Islander (starting in 1990).³ Includes Aleut and Eskimo.

Note: Data on education of mother are not available from California, Texas, and Washington. Other States do not have data on marital status, education, and/or month prenatal care began for certain years before 1980.

Sources: (1) National Center for Health Statistics. Health, United States 1988, Mar 1989, Department of Health and Human Services Pub. No. (PHS) 89-1232, Hyattsville, MD, Table 7, p. 47, (2) National Center for Health Statistics. Monthly Vital Statistics Report, Advance Report of Final Natality Statistics, 1987, Vol. 38, No. 3 Supplement, Jun 29, 1989, Hyattsville, MD, Table 2, p. 16, Table 15, pp. 28–29, Table 18, p. 32, Table 21, p. 36, Tables 28 & 29, p. 40, Table 30, p. 41, and (3) Unpublished data from National Center for Health Statistics.

Table 12

Number of live births, percent distribution by birthweight, and mean birthweight, by weight gain during pregnancy and race of mother; and fraction of birth mothers in each weight gain category, by race and birthweight of infant: United States, 1980

Race of mother and birthweight	Weight gain during pregnancy					
	Total	Less than 16 pounds	16–20 pounds	21–25 pounds	26–35 pounds	36 pounds or more
All races ¹	Number in thousands					
Live births	3,581	428	408	613	1,242	889
	Percent distribution					
Total	100.0	100.0	100.0	100.0	100.0	100.0
Less than 2,500 grams	6.7	13.9	11.4	6.1	5.0	4.0
2,500–2,999 grams	16.1	24.5	19.6	18.1	15.2	10.2
3,000–3,499 grams	37.3	36.8	42.2	38.6	37.5	34.1
3,500 grams or more	39.9	24.8	26.8	37.2	42.3	51.7

Table 12

Number of live births, percent distribution by birthweight, and mean birthweight, by weight gain during pregnancy and race of mother; and fraction of birth mothers in each weight gain category, by race and birthweight of infant: United States, 1980—Continued

		Mean in grams				
Birthweight		3,343	3,080	3,175	3,315	3,381
Standard error		6	20	19	13	10
White		Number in thousands				
Live births		2,917	306	323	505	1,034
		Percent distribution				
Total		100.0	100.0	100.0	100.0	100.0
Less than 2,500 grams		5.6	12.5	9.8	5.3	4.2
2,500–2,999 grams		14.4	21.6	17.9	16.7	13.9
3,000–3,499 grams		36.8	37.0	43.0	38.1	37.0
3,500 grams or more		43.2	28.9	29.3	39.8	44.9
		Mean in grams				
Birthweight		3,391	3,149	3,226	3,348	3,418
Standard error		8	25	22	15	11
Black		Number in thousands				
Live births		554	111	70	89	166
		Percent distribution				
Total		100.0	100.0	100.0	100.0	100.0
Less than 2,500 grams		12.5	18.3	19.1	10.0	10.1
2,500–2,999 grams		24.6	32.4	27.6	26.0	22.1
3,000–3,499 grams		39.0	36.2	35.7	40.4	41.4
3,500 grams or more		24.0	13.1	17.6	23.6	26.3
		Mean in grams				
Birthweight		3,099	2,879	2,950	3,137	3,156
Standard error		12	28	36	36	25
		Fraction of birth mothers in each pregnancy weight gain category				
		Percent distribution				
White						
All birthweights		100	10.5	11.1	17.3	35.4
Less than 2,500 grams		100	23.3	19.3	16.3	26.4
		Weight gain during pregnancy				
Race of mother and birthweight		Total	Less than 16 pounds	16–20 pounds	21–25 pounds	26–35 pounds
						36 pounds or more
2,500 grams or more		100	9.8	10.7	17.5	36.3
Black						
All birthweights		100	20.0	12.6	16.1	30.0
Less than 2,500 grams		100	29.4	19.3	12.9	24.3
2,500 grams or more		100	18.7	11.7	16.5	30.8

¹ Includes races other than white and black.

Source: National Center for Health Statistics. "Maternal Weight Gain and the Outcome of Pregnancy, United States, 1980," Vital and Health Statistics, Series 21, No. 44, Department of Health and Human Services Pub. No. (PHS) 86-1922.

Washington. U.S. Government Printing Office, June 1986, Table E, p. 10.

Table 13

Number of live births and percent distribution by weight gain during pregnancy, and mean weight gain, by race of mother and period of gestation: United States, 1980

Race of mother and period of gestation	Number in thousands	Weight gain during pregnancy							
		Percent distribution						Pounds	
	Live births	Total	Less than 16 pounds	16-20 pounds	21-25 pounds	26-35 pounds	36 pounds or more	Mean	Stand-ard error of mean
All races ¹	3,581	100.0	12.0	11.4	17.1	34.7	24.8	28.7	0.2
Under 32 weeks	64	100.0	37.5	19.4	16.2	16.5	10.3	20.9	1.1
32-35 weeks	164	100.0	22.0	15.3	15.8	32.4	14.6	24.8	0.4
36 weeks	126	100.0	16.6	14.1	19.6	31.5	18.1	26.5	0.9
37-39 weeks	1,238	100.0	12.6	11.9	18.1	36.0	21.4	27.9	0.3
40 weeks	869	100.0	9.4	10.5	17.2	37.2	25.7	29.6	0.3
41 weeks	528	100.0	8.6	10.5	18.3	34.2	28.5	30.1	0.3
42 weeks and over	591	100.0	11.0	9.9	13.9	32.0	33.2	30.5	0.4
White	2,917	100.0	10.5	11.1	17.3	35.4	25.7	29.1	0.2
Under 32 weeks	42	100.0	37.9	19.1	16.9	17.7	*8.4	19.9	1.1
32-35 weeks	113	100.0	20.0	14.4	15.6	34.5	15.5	25.4	0.6
36 weeks	98	100.0	15.6	13.7	19.1	34.0	17.6	27.0	1.1
37-39 weeks	988	100.0	10.3	11.7	18.5	36.9	22.6	28.4	0.3
40 weeks	720	100.0	8.5	10.3	17.4	37.5	26.3	29.9	0.3
41 weeks	455	100.0	8.0	10.8	17.5	35.1	28.5	30.0	0.4
42 weeks and over	501	100.0	10.6	9.3	14.6	31.9	33.7	30.5	0.3
Black	554	100.0	20.0	12.6	16.0	30.0	21.3	26.8	0.5
Under 32 weeks	21	100.0	37.3	*19.0	*15.1	*14.2	*14.4	22.9	1.6
32-35 weeks	47	100.0	27.0	14.6	15.9	29.4	13.1	23.7	0.4
36 weeks	24	100.0	*18.3	*17.0	*23.2	*20.9	*20.6	24.5	2.0
37-39 weeks	208	100.0	23.6	12.5	16.0	29.4	18.4	25.8	0.8
40 weeks	122	100.0	16.0	11.0	16.4	35.0	21.6	27.4	0.7
41 weeks	58	100.0	*11.4	*9.9	*21.7	28.8	28.1	30.5	1.2
42 weeks and over	74	100.0	*14.1	*13.4	*9.1	32.2	31.2	30.0	1.3

¹ Includes races other than white and black.

* Figure does not meet standards of reliability or precision (30 percent or more relative standard error).

Source: National Center for Health Statistics. S. Taffel, "Material Weight Gain and the Outcome of Pregnancy, United States, 1980," Vital and Health Statistics, Series 21, No. 44, Department of Health and Human Services Pub. No. (PHS) 86-1922, Table A, p. 31.

Table 14Infant mortality risk by birthweight,¹ age at death, and race, single-delivery infants born during 1980

Race	Less than 500 g	500 to 999 g	1,000 to 1,499 g	1,500 to 1,999 g	2,000 to 2,499 g	2,500 to 2,999 g	3,000 to 3,499 g	3,500 to 3,999 g	4,000 to 4,499 g	4,500 g or more	Total
Neonatal deaths per 1,000 live births											
Blacks	1,000.0	615.6	131.3	36.1	10.6	3.6	2.4	2.5	2.8	8.7	12.5
Whites	1,000.0	660.8	212.1	61.6	18.3	4.2	1.8	1.3	1.4	3.0	6.2
All races ²	1,000.0	647.6	186.5	53.9	16.0	4.0	1.9	1.4	1.5	3.5	7.3
Postneonatal deaths per 1,000 neonatal survivors											
Blacks	—	157.1	49.8	24.2	11.6	6.5	4.4	3.2	3.3	4.1	6.5
Whites	—	115.0	43.7	18.9	9.4	4.4	2.5	1.8	1.7	2.0	3.1
All races ²	—	135.2	45.8	20.7	10.2	4.9	2.9	2.0	1.9	2.2	3.7
Infant deaths per 1,000 live births											
Blacks	1,000.0	676.0	174.6	59.4	22.1	10.0	6.8	5.7	6.1	12.8	18.9
Whites	1,000.0	699.8	246.5	79.3	27.5	8.5	4.3	3.1	3.1	5.1	9.3
All races ²	1,000.0	695.2	223.7	73.5	26.0	8.9	4.8	3.5	3.4	5.7	11.0

¹ Number of infants with unknown birthweight were redistributed according to percentage of infants with known birthweight.² All races includes unknown race and infants of other races.

Source: C.R. Hogue, J.W. Buehler, L.T. Strauss, and J.C. Smith, "Overview of the National Infant Mortality Surveillance (NIMS) Project—Design, Methods, Results," Public Health Reports, March–April 1987, Vol. 102, No. 2, Table 2, p. 130.

Table 15

Percent of American Indian, Alaska Native, White, and Black births with selected characteristics: United States, 1984

Selected characteristics	All races ¹	Indian			White	Black
		Total	American Indian	Alaska Native		
Fourth and higher order births	9.6	18.1	17.9	20.9	8.5	13.9
Births to unmarried mothers ²	21.0	39.8	39.7	40.5	13.4	59.2
Births of low birthweight ³	6.7	6.2	6.2	5.9	5.6	12.4
Preterm births ^{4, 5}	9.4	11.0	10.9	12.3	7.9	16.8

¹ Includes races not shown separately.² Births to unmarried women per 1,000 total live births.³ Birthweight of less than 2,500 grams (5 lb. 8 oz.).⁴ Born prior to 37 completed weeks of gestation.⁵ Data from 49 reporting states and the District of Columbia; excludes data for New Mexico.

Source: National Center for Health Statistics. S.M. Taffel, "Characteristics of American Indian and Alaska Native Births: United States, 1984." Monthly Vital Statistics Report Vol. 36, No. 3, Supplement, Jun 19, 1987, Table 4, p. 8; Table 8, p. 9; Tables 9 and 10, p. 11.

Table 16

Total fertility rates and birth rates*, by age of mother and race of child: United States, 1970, 1975, 1980, 1987

Year and race of child	Total fertility rate	10-14 years	Age of mother								
			15-19 years			20-24 years	25-29 years	30-34 years	35-39 years	40-44 years	45-49 years
			Total	15-17 years	18-19 years						
All races											
1987	1,871.0	1.3	51.1	31.8	80.2	108.9	110.8	71.3	26.2	4.4	0.2
1980 ¹	1,839.5	1.1	53.0	32.5	82.1	115.1	112.9	61.9	19.8	3.9	0.2
1975 ¹	1,774.0	1.3	55.6	36.1	85.0	113.0	108.2	52.3	19.5	4.6	0.3
1970 ²	2,480.0	1.2	68.3	38.8	114.7	167.8	145.1	73.3	31.7	8.1	0.5
White											
1987	1,766.5	0.6	41.9	24.1	68.6	101.1	109.5	70.8	25.2	4.0	0.2
1980 ¹	1,748.5	0.6	44.7	25.2	72.1	109.5	112.4	60.4	18.5	3.4	0.2
1975 ¹	1,686.0	0.6	46.4	28.0	74.0	108.2	108.1	51.3	18.2	4.2	0.2
1970 ²	2,385.0	0.5	57.4	29.2	101.5	163.4	145.9	71.9	30.0	7.5	0.4
All other											
1987	2,349.0	4.0	90.9	64.7	131.2	145.4	117.3	73.8	31.5	6.5	0.4
1980 ¹	2,323.0	3.9	94.9	68.3	133.2	145.0	115.5	70.8	27.9	6.5	0.4
1975 ¹	2,276.0	4.7	106.4	80.5	146.1	141.0	108.7	58.8	27.6	7.5	0.5
1970 ²	3,066.7	4.8	133.4	95.2	195.4	196.8	140.1	82.5	42.2	12.6	0.9
Black ³											
1987	2,294.0	4.7	100.3	72.9	142.2	149.5	109.0	63.5	26.3	5.3	0.2
1980 ¹	2,266.0	4.3	100.0	73.6	138.8	146.3	109.1	62.9	24.5	5.8	0.3
1975 ¹	2,243.0	5.1	111.8	85.6	152.4	142.8	102.2	53.1	25.6	7.5	0.5
1970 ²	3,098.7	5.2	140.7	101.4	204.9	202.7	136.3	79.6	41.9	12.5	1.0
Ratio of All Other Birth Rates to White Rates											
1987		6.7	2.2	2.7	1.9	1.4	1.1	1.0	1.3	1.6	2.0
1980		6.5	2.1	2.7	1.8	1.3	1.0	1.2	1.5	1.9	2.0
1975		7.8	2.3	2.9	2.0	1.3	1.0	1.1	1.5	1.8	2.5
1970		9.6	2.3	3.3	1.9	1.2	1.0	1.1	1.4	1.7	2.3
Ratio of Black Birth Rates to White Rates											
1987		7.8	2.4	3.0	2.1	1.5	1.0	0.9	1.0	1.3	1.0
1980		7.2	2.2	2.9	1.9	1.3	1.0	1.0	1.3	1.7	1.5
1975		8.5	2.4	3.1	2.1	1.3	0.9	1.0	1.4	1.8	2.5
1970		10.4	2.5	3.5	2.0	1.2	0.9	1.1	1.4	1.7	2.5

¹ Based on 100 percent of births in selected States and on a 50-percent sample of births in all other States.² Based on a 50-percent sample of births.³ Included in "All other."

* Total fertility rates are sums of birth rates for 5-year age groups multiplied by 5. Birth rates are live births per 1,000 women in specified group, enumerated as of April 1 for 1970 and 1980 and estimated as of July 1 for all other years.

Source: National Center for Health Statistics. Advance Report of Final Natality Statistics, 1987, Monthly Vital Statistics Report, Vol. 38, No. 3, Supplement, Jun 1989, Department of Health and Human Services Pub. No. (PHS) 89-1120, Hyattsville, MD, Table 4, pp. 18-19.

Table 17

Percent of births with selected characteristics, by Hispanic origin of mother and by race of child for White and Black mothers of non-Hispanic origin: Total of 23 reporting States and the District of Columbia, 1987

Characteristic	Origin of mother									
	All origins ¹	Hispanic						Non-Hispanic		
		Total	Mexican	Puerto Rican	Cuban	Central and South American	Other and unknown Hispanic	Total ²	White	Black
Fourth and higher order births	10.3	15.5	18.1	11.8	5.5	11.4	11.7	9.2	7.7	14.1
Births to unmarried mothers	25.3	32.6	28.9	53.0	16.1	37.1	34.2	23.9	13.9	63.1
Births of low birthweight ³	7.0	6.2	5.7	9.3	5.9	5.7	6.9	7.1	5.6	12.9
Mothers who had late or no prenatal care	7.0	12.7	13.0	17.1	3.9	13.5	9.3	5.8	4.1	11.6

¹ Includes origin not stated.

² Includes races other than White and Black.

³ Birthweight of less than 2,500 grams (5 lb. 8 oz.).

Source: Excerpted from National Center for Health Statistics. Advance Report of Final Natality Statistics, 1987. Monthly Vital Statistics Report, Vol. 38, No. 3, Supplement, Jun 29, 1989, Department of Health and Human Services Pub. No. (PHS) 89-1120, Hyattsville, MD, Table 27, p. 39.

Table 18

Percentage distribution of all second and higher order births, by interval between current birth and previous birth, and race of child: Total of 49 reporting States and the District of Columbia, 1987

Interval between current birth and previous birth	Total	Race of child		
		White	Black	Other
1-11 months	1.6	1.3	3.0	2.3
12-17 months	11.1	10.1	14.7	14.3
18-23 months	14.1	14.3	13.1	14.4
24-35 months	24.1	25.3	18.4	22.1
36-47 months	15.7	16.5	12.4	14.5
48-59 months	10.3	10.5	9.5	9.9
60-71 months	6.8	6.7	7.1	6.7
72 months or more	16.4	15.2	21.8	15.6

Note: Excludes data for Texas, which did not require reporting of date of last live birth. Excludes not stated birth interval and second or later born children in multiple deliveries (interval of 0 months).

Source: Computed from National Center for Health Statistics. Advance Report of Final Natality Statistics, 1987, Monthly Vital Statistics Report, Vol. 38 No. 3, Supplement, Jun 29, 1989, Department of Health and Human Services Pub. No. (PHS) 89-1120, Table 20, p. 35.

Table 19

Percentage distribution of live births by live-birth order and race of child: United States, 1987

	Total	First child	Second or third child	Fourth child or over
Total	100.0	41.3	48.9	9.8
White	100.0	41.8	49.5	8.7
Black	100.0	39.2	47.0	13.8
Asian and Pacific Islander	100.0	43.0	45.9	11.1
Chinese	100.0	50.5	45.1	4.3
Japanese	100.0	47.1	48.5	4.5
Hawaiian	100.0	37.1	48.7	14.1
Filipino	100.0	43.8	48.9	13.8
Other	100.0	40.7	44.3	15.0
American Indian and Alaska Native	100.0	33.8	47.2	19.1

Sources: Compiled from 1) National Center for Health Statistics. Advance Report of Final Natality Statistics, 1987, Monthly Vital Statistics Report, Vol. 38, No. 3, Supplement, Jun 29, 1989, Department of Health and Human Services Pub. No. (PHS) 89-1120, Table 2. Unpublished data from the National Center for Health Statistics, Natality Statistics Branch.

Table 20

Maternal deaths and death rates, American Indians and Alaska Natives in Reservation States and U.S., all races, 1958–1986

Calendar year	Indian & Alaska Native		U.S. All Races		U.S. Other than White	Ratio Indian to:	
	Number	Rate ¹	Number	Rate	Rate	U.S. All Races	U.S. Other than White
1986	2						
1985	7	8.2	295	7.8	18.1	1.1	0.5
1984	1	10.8	285	7.8	16.9	1.4	0.6
1983	5	7.6	290	8.0	16.3	1.0	0.5
1982	3	8.9	292	7.9	16.4	1.1	0.5
1981	2	7.5	309	8.5	17.3	0.9	0.4
1980	3	9.0	334	9.2	19.8	1.0	0.5
1979	4	11.4	336	9.6	22.7	1.2	0.5
1978	4	11.1	321	9.6	23.0	1.2	0.5
1977	2	8.3	373	11.2	26.0	0.7	0.3
1976	1	8.7	390	12.3	26.5	0.7	0.3
1975	4	11.8	340	12.8	29.0	0.9	0.4
1974	4	16.3	462	14.6	35.1	1.1	0.5
1973	4	23.7	477	15.2	34.6	1.6	0.7
1972	9	30.8	612	18.8	38.5	1.6	0.8
1971	9	35.0	668	18.8	45.3	1.9	0.8
1970	7	32.3	803	21.5	55.9	1.5	0.6
1969	6	32.8	801	22.2	55.7	1.5	0.6
1968	9	37.0	859	24.5	63.6	1.5	0.6
1967	7	49.1	987	28.0	69.5	1.8	0.7
1966	16	54.6	1,049	29.1	72.4	1.9	0.8
1965	12	63.4	1,189	31.6	83.7	2.0	0.8
1964	14	74.2	1,343	33.3	89.9	2.2	0.8
1963	24	83.7	1,466	35.8	96.9	2.3	0.9
1962	18	89.7	1,465	35.2	95.9	2.5	0.9
1961	17	66.5	1,573	36.9	101.3	1.8	0.7
1960	8	67.9	1,579	37.1	97.9	1.8	0.7
1959	18	68.8	1,588	37.4	102.1	1.8	0.7
1958	16	82.6	1,581	37.6	101.8	2.2	0.8

¹ Indian and Alaska Native rates are 3-year rates centered in the year specified. All other rates are for the year specified.
Source: Department of Health and Human Services. Indian Health Service, "Trends in Indian Health 1989," Table 3.6, p. 24.

Table 21

Maternal deaths and maternal mortality rates* for selected causes, by race: United States, 1987

Cause of death (Ninth Revision, International Classification of Diseases, 1975)	Number				Rate			
	All races	White	All other		All races	White	All other	
			Total	Black			Total	Black
Complications of pregnancy, childbirth, and the puerperium, 630-676	251	153	98	91	6.6	5.1	12.0	14.2
Pregnancy with abortive outcome, 630- 638	44	25	19	18	1.2	0.8	2.3	2.8
Ectopic pregnancy, 633	30	16	14	13	0.8	0.5	1.7	2.0
Spontaneous abortion, 634	5	5	—	—	0.1	0.2	—	—
Legally induced abortion, 635	3	1	2	2	0.1	0.0	0.2	0.3
Illegally induced abortion, 636	—	—	—	—	—	—	—	—
Other pregnancy with abortive outcome, 630-632, 637-638	6	3	3	3	0.2	0.1	0.4	0.5
Direct obstetric causes, 640-646, 651-676	192	119	73	67	5.0	4.0	8.9	10.4
Hemorrhage of pregnancy and child- birth, 640-641, 666	33	21	12	10	0.9	0.7	1.5	1.6
Toxemia of pregnancy, 642.4-642.9, 643	34	21	13	12	0.9	0.7	1.6	1.9
Obstructed labor, 660	—	—	—	—	—	—	—	—
Complications of the puerperium, 670- 676	84	57	27	26	2.2	1.9	3.3	4.1
Other direct obstetric causes, 642.0- 642.3, 644-646, 651-659, 661-665, 667-669	41	20	21	19	1.1	0.7	2.6	3.0
Indirect obstetric causes, 647-648	15	9	6	6	0.4	0.3	0.7	0.9
Delivery in a completely normal case, 650	—	—	—	—	—	—	—	—

—Not available.

* Maternal deaths are those assigned to Complications of pregnancy, childbirth, and the puerperium, category numbers 630-676 of the Ninth Revision, International Classification of Diseases, 1975. Rates per 100,000 live births in specified group.

Source: National Center for Health Statistics. Advance Report of Final Mortality Statistics, 1987. Monthly Vital Statistics Report, Vol. 38, No. 5, Supplement, Sep 26, 1989, Department of Health and Human Services Pub. No. (PHS) 89-1120, Hyattsville, MD, Table 16, p. 33.

Table 22

Maternal mortality ratios* and relative risks for age and race, by cause of death: United States, 19 reporting areas, 1980-1985

Cause of death	Age group		RR	Race group		RR
	<30 ratio	≥ 30 ratio		White ratio	Black and others ratio	
Embolism	2.0	5.5	2.7	1.7	4.4	2.6
Indirect**	2.0	4.8	2.3	1.6	4.1	2.5
Hypertensive disease	1.5	3.7	2.5	1.1	3.4	3.0
Ectopic pregnancy	1.1	3.3	3.0	0.7	3.5	5.3
Hemorrhage	0.8	3.2	3.8	1.1	1.5	1.3
Cerebrovascular accident	1.1	2.7	2.4	1.3	1.8	1.4
Anesthesia	0.9	2.1	2.4	0.6	2.3	4.2
Abortion (all types)	0.7	1.5	2.1	0.4	1.8	4.1
Cardiomyopathy	0.3	2.0	7.1	0.4	1.2	3.2
Infection	0.7	0.4	0.6	0.4	0.8	1.8
Other	1.2	2.1	1.8	0.7	1.9	2.7
All causes	12.3	31.3	2.5	10.0	26.7	2.7

RR=relative risk.

* Crude cause-specific ratio per 100,000 live births for each age group or race group.

** Indirect maternal deaths, coded as ICD-9, 647-648.

Source: R.W. Rochat, L.M. Koonin, H.K. Atrash, J.F. Jewett, and the Maternal Mortality Collaborative, "Maternal Mortality in the United States: Report from the Maternal Mortality Collaborative," *Obstetrics & Gynecology*, Vol. 72, No. 1, Jul 1988, Table 4, p. 94.

Table 23

Percent of women age 15 to 44 who were contraceptively sterile, surgically sterile for noncontraceptive reasons, had impaired fecundity, or were fecund, by race and marital status, 1982

	Number of women (in thousands)	Percent distribution			
		Contraceptively sterile	Surgically sterile, noncontraceptive	All impaired	Fecund
All marital statuses					
Total	54,099	17.5	7.8	8.4	66.3
White	45,367	17.9	7.8	8.5	65.9
Black	6,985	14.8	7.3	8.6	69.3
Never married					
Total	19,164	1.3	0.8	4.1	93.8
White	14,948	0.4	0.4	3.8	95.4
Black	3,545	5.1	2.3	5.6	87.1
Currently married					
Total	28,231	27.8	11.0	10.8	50.3
White	25,195	28.2	10.7	10.8	50.4
Black	2,130	23.1	13.1	12.7	51.1
Widowed, divorced, or separated					
Total	6,704	20.0	14.5	10.8	54.8
White	5,224	18.0	14.8	10.8	56.3
Black	1,310	27.9	11.3	10.0	50.8

Source: Unpublished data from National Center for Health Statistics. National Survey of Family Growth, 1982.

Table 24

Percent of currently married women 15–44 years of age (excluding the surgically sterile) who were infertile, by age, parity, and race: United States, 1965, 1976, and 1982

Age, parity, and race	Percent ¹		
	1982	1976	1965
Total ²	13.9	14.3	13.3
Age			
15–19 years	*2.1	*2.1	*0.6
20–24 years	10.6	6.7	*3.6
25–29 years	8.7	10.8	7.2
30–34 years	13.6	16.1	14.0
35–39 years	24.6	22.8	18.4
40–44 years	27.2	31.1	27.7
Parity			
Parity 0	21.8	19.2	15.6
Parity 1	13.1	13.6	18.6
Parity 2	9.3	8.9	10.8
Parity 3 or more	*10.3	15.8	12.0
Race and age			
White			
15–44 years	13.3	13.3	12.5
15–29 years	8.6	7.5	4.7
30–44 years	19.3	20.8	18.4
Black			
15–44 years	20.6	23.1	19.0
15–29 years	13.6	13.3	4.8
30–44 years	27.8	34.1	32.9

¹ Number of infertile women divided by number of infertile women plus fecund women.

² Includes white, black, and other races.

* Figure does not meet standard of reliability or precision (30 percent or more relative standard error).

Note: Statistics are based on a sample of the household population of the conterminous United States.

Source: National Center for Health Statistics. W.D. Mosher and W. F. Pratt, "Fecundity, Infertility, and Reproductive Health in the United States, 1982," Vital and Health Statistics Series 23, No. 14, Department of Health and Human Services Pub. No. (PHS) 87-1990, May 1986, Table H, p. 15.

Table 25

Number of women 15-44 years of age and percent distribution by current contraceptive status and method, by marital status, race, and Hispanic origin: United States, 1982

Contraceptive status and method	Marital status and race									Hispanic origin	
	All marital statuses ¹			Currently married			Widowed, divorced, or separated			Hispanic	Non-Hispanic
	All races ²	White	Black	All races ²	White	Black	All races ²	White	Black		
Number in thousands											
All women	54,099	45,367	6,985	28,231	25,195	2,130	6,704	5,224	1,310	4,393	49,706
Percent distribution											
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sterile	27.2	27.7	23.7	40.9	41.0	38.0	38.0	36.8	41.5	20.4	27.8
Surgically sterile	25.7	26.1	22.2	38.9	38.9	36.2	36.1	35.0	39.2	18.4	26.3
Contraceptively sterile	17.8	18.3	14.9	27.8	28.2	23.1	21.6	20.2	27.9	12.3	18.3
Female	11.9	11.6	14.2	17.4	17.0	20.9	19.8	17.8	27.9	10.2	12.1
Male	5.9	6.7	*0.7	10.5	11.2	2.2	*1.9	*2.4	—	*2.0	6.3
Noncontraceptively sterile	7.8	7.8	7.3	11.0	10.7	13.1	14.5	14.8	11.3	6.1	8.0
Female	7.3	7.3	7.3	10.1	9.8	13.1	14.5	14.8	11.3	5.8	7.5
Male	0.5	0.5	0.0	1.0	1.0	*0.1	—	—	—	*0.2	0.5
Nonsurgically sterile	1.5	1.6	1.5	2.0	2.1	*1.8	1.9	1.8	2.4	*2.1	1.5
Pregnant, post partum	5.0	4.8	5.6	7.2	7.2	6.1	2.6	2.6	2.1	7.3	4.8
Seeking pregnancy	4.2	4.0	5.4	6.7	6.5	8.6	2.1	1.2	5.2	6.4	4.0
Other nonuser	26.9	26.2	29.6	5.0	4.5	9.6	25.6	25.3	25.4	29.2	26.7
Never had intercourse	13.6	13.9	10.3	—	—	—	—	—	—	14.7	13.5
No intercourse in last 3 months	5.9	6.0	5.8	*0.2	*0.1	*0.9	15.1	16.0	10.6	6.0	5.9
Intercourse in last 3 months	7.4	6.4	13.5	4.8	4.4	8.7	10.4	9.3	14.8	8.5	7.3
Nonsurgical contraceptors	36.7	37.2	35.7	40.1	40.7	37.7	31.8	34.1	25.9	36.7	36.7
Pill	15.6	15.1	19.8	13.4	13.4	15.5	15.8	17.1	11.4	15.3	15.6
IUD	4.0	3.9	4.7	4.8	4.8	5.9	6.4	6.6	6.3	9.7	3.5
Diaphragm	4.5	5.0	1.8	4.5	4.7	3.3	3.7	4.4	*1.4	*2.4	4.7
Condom	6.7	7.2	3.2	9.8	10.2	4.3	*0.8	*0.8	*0.9	*3.5	6.9
Foam	1.3	1.4	1.4	2.0	2.0	*2.1	*1.1	*1.1	*0.9	*1.1	1.3
Periodic abstinence	2.2	2.2	1.6	3.2	3.3	2.4	*1.4	*1.2	2.1	*2.0	2.2
Withdrawal	1.1	1.2	*0.7	1.2	1.2	*1.2	*0.3	*0.4	*0.1	*1.3	1.1
Douche	*0.1	0.0	*0.7	*0.1	*0.1	*1.0	*0.1	—	*0.4	*0.0	*0.1
Other methods	1.3	1.2	1.7	1.0	0.9	*2.1	2.3	*2.3	2.3	*1.4	1.3

¹ Includes never married and ever married women.

² Includes white, black, and other races.

* Figure does not meet standards of reliability or precision (30 percent or more relative standard error).

Note: Statistics are based on a sample of the household population of the conterminous United States.

Source: National Center for Health Statistics, W.D. Mosher and C.A. Bachrach, "Contraceptive Use, United States, 1982," Vital and Health Statistics, Series 23, No. 12, Department of Health and Human Services Pub. No. (PHS) 86-1988, Washington, U.S. Government Printing Office, Sep 1986, Table 8, p. 32.

Table 26

Number of currently married women 15-44 years of age and percent distribution by current contraceptive status and method, by race: United States, 1973, 1976, and 1982

Contraceptive status and method	All races ¹			White			Black		
	1982	1976 ²	1973 ²	1982	1976 ²	1973 ²	1982	1976 ²	1973 ²
Number in thousands									
All currently married women	28,231	27,488	26,646	25,195	24,795	24,249	2,130	2,169	2,081
Percent distribution									
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sterile	40.9	30.0	23.9	41.1	30.7	24.0	37.8	24.4	22.7
Surgically sterile	38.9	28.2	22.9	38.9	29.0	23.2	36.3	21.6	20.8
Contraceptively sterile	27.9	18.6	16.4	28.2	19.3	16.5	23.2	12.7	14.6
Female	17.4	9.5	8.6	17.0	9.6	8.2	21.0	10.9	13.6
Male	10.4	9.0	7.8	11.2	9.7	8.4	2.2	*1.7	1.0
Noncontraceptively sterile	11.1	9.7	6.5	10.7	9.7	6.6	13.2	9.0	6.2
Female	10.1	8.9	6.3	9.8	8.9	6.3	13.1	8.7	6.1
Male	*1.0	0.7	0.2	*1.0	0.8	0.3	*0.1		*0.1
Nonsurgically sterile	*2.0	1.7	0.9	*2.1	1.7	0.8	*1.4	2.7	1.9
Pregnant, post partum	7.2	6.8	7.3	7.2	6.8	7.4	6.1	6.8	6.8
Seeking pregnancy	6.7	6.5	7.0	6.6	5.9	6.8	8.5	9.6	7.1
Other nonusers	5.0	7.6	8.7	4.5	7.1	7.8	9.8	13.3	17.9
Nonsurgical contraceptors	40.1	49.2	53.2	40.6	49.5	54.0	37.8	45.9	45.4
Pill	13.5	22.5	25.1	13.4	22.6	25.1	15.6	22.2	26.3
IUD	4.8	6.3	6.7	4.8	6.3	6.6	5.9	6.2	7.6
Diaphragm	4.5	2.9	2.4	4.7	3.0	2.5	3.3	1.8	1.2
Condom	9.8	7.3	9.4	10.2	7.5	9.9	4.3	4.6	3.2
Foam	2.0	3.0	3.5	2.0	2.9	3.5	*2.1	3.8	3.0
Periodic abstinence	3.2	3.4	2.8	3.3	3.5	2.9	*2.4	*1.4	*0.8
Withdrawal	*1.2	2.0	1.5	*1.2	2.1	1.6	*0.1	1.8	*0.4
Douche	*0.1	0.7	0.6	0.0	0.6	0.5	*1.0	2.7	1.8
Other	*1.0	1.0	1.3	*0.9	1.0	1.4	*2.1	*1.4	1.0

¹ Includes white, black, and other races.

² Includes unmarried women living with a partner.

* Figure does not meet standards of reliability or precision (30 percent or more relative standard error).

Note: Statistics are based on samples of the household population of the conterminous United States. Data for 1982 are preliminary estimates from the 1982 National Survey of Family Growth.

Source: National Center for Health Statistics. "Use of Contraception in the United States, 1982," Advance Data No. 102, Dec 4, 1984, Table 2, p. 3.

Table 27

Number of never married women 15–44 years of age who were exposed to the risk of unintended pregnancy, and percent using a method of contraception, by race and age, and percent distribution of contraceptors by method of contraception, by race and age: United States, 1982

Race and age	Exposed ¹ (number in thousands)	Using a method (percent)	Method of contraception (percent distribution)						
			All methods	Steriliza- tion	Pill	IUD	Diaphragm	Condom	Other methods ²
All races ³									
15-44	8,727	76.1	100.0	5.1	53.2	5.0	13.7	11.8	11.2
15-19	2,872	67.6	100.0	*0.4	62.2	*0.9	*6.4	22.3	*7.6
15-17	1,081	60.0	100.0		63.7	*1.3	*3.6	25.0	*6.4
20-44	5,855	80.3	100.0	7.0	49.5	6.7	16.6	7.5	12.7
White									
15-44	6,372	77.4	100.0	*3.1	51.6	*3.7	17.1	13.0	11.4
15-19	2,188	69.0	100.0	*0.6	59.6	*0.1	*7.8	24.7	*7.3
15-17	803	60.2	100.0		62.4	*0.3	*4.4	*28.6	*4.2
20-44	4,184	81.8	100.0	*4.2	48.1	*5.4	21.2	7.9	13.2
Black									
15-44	2,098	73.0	100.0	12.1	58.9	8.0	*2.6	7.9	10.4
15-19	618	63.9	100.0		71.4	*4.2	*2.0	*13.0	*9.5
15-17	253	58.7	100.0		65.1	*4.5	*1.5	*14.5	*14.3
20-44	1,480	76.9	100.0	16.3	54.6	9.4	*2.9	6.1	10.7

¹ Includes women using contraception and those not using contraception who had sexual intercourse in the last 3 months and were not pregnant, post partum, seeking pregnancy, or noncontraceptively sterile.

² Includes foam, periodic abstinence, withdrawal, douche, suppositories, and other methods.

³ Includes white, black, and other races.

*Figure does not meet standards of reliability or precision (30 percent or more relative standard error).

Note: Preliminary data based on a sample of the household population of the conterminous United States.

Source: National Center for Health Statistics. "Use of Contraception in the United States, 1982," Advance Data No. 102, Dec 4, 1984, Table 4, p. 5.

Table 28

Estimated pregnancy rates by outcome of pregnancy, age of woman, and race, United States: 1976, 1980, 1982, and 1983

Pregnancy outcome and year	Age of woman										Race	
	Total ^a	Under 15 years ^b	15–19 years			20–24 years	25–29 years	30–34 years	35–39 years	40 years and over ^c	White	All other
			Total	15–17 years	18–19 years							
Rate per 1,000 women												
All pregnancies												
1983	108.0	3.3	109.2	73.2	157.0	175.4	160.8	98.9	39.6	8.6	97.4	163.6
1982	110.1	3.1	110.1	73.0	160.6	178.6	163.9	98.4	38.0	8.9	99.8	165.1
1980	111.9	3.2	110.0	73.2	162.2	183.6	165.7	95.0	36.4	9.1	101.4	170.3
1976	102.7	3.2	101.4			166.1	150.7	82.3	35.3	9.9	92.0	166.4
Live births												
1983	65.8	1.1	51.7	32.0	78.1	108.3	108.7	64.6	22.1	4.0	62.4	83.2
1982	67.3	1.1	52.9	32.4	80.7	111.3	111.0	64.2	21.1	4.1	63.9	85.5
1980	68.4	1.1	53.0	32.5	82.1	115.1	112.9	61.9	19.8	4.1	64.7	88.6
1976	65.0	1.2	52.8	34.1	80.5	110.3	106.2	53.6	19.0	4.5	61.5	85.8
Induced abortions												
1983	28.5	1.9	43.5	30.8	60.4	51.2	31.1	17.8	9.6	3.1	23.3	55.5
1982	28.8	1.7	43.1	30.1	60.7	50.9	31.5	17.8	9.2	3.3	23.8	55.4
1980	29.4	1.7	42.7	30.1	60.6	51.6	31.0	17.2	9.4	3.5	24.6	56.3
1976	24.2	1.6	34.3	24.2	49.3	39.6	24.1	15.0	9.3	3.7	18.8	56.3
Fetal losses ^d												
1983	13.8	0.4	13.9	10.4	18.5	15.9	21.0	16.5	8.0	1.4	11.6	24.8
1982	14.0	0.4	14.2	10.6	19.2	16.3	21.5	16.4	7.7	1.5	12.1	24.2
1980	14.1	0.4	14.3	10.6	19.5	16.9	21.8	15.8	7.2	1.5	12.1	25.4
1976	13.4	0.4	14.3			16.2	20.5	13.7	6.9	1.6	11.6	24.3

^a Rates computed by relating the number of events to women of all ages to women aged 15-44 years.^b Rates computed by relating the number of events to women under 15 years to women aged 10-14 years.^c Rates computed by relating the number of events to women aged 40 years and over to women aged 40-44 years.^d Spontaneous fetal losses from recognized pregnancies of all gestational periods as reported by women in the 1982 National Survey of Family Growth conducted by the National Center for Health Statistics (NCHS). It is known that the rate of pregnancy loss depends on the degree to which losses at very early gestations are detected. Based on unrounded frequencies.

Source: Excerpted from S.J. Ventura, S.M. Taffel, and W.D. Mosher, "Estimates of Pregnancies and Pregnancy Rates for the United States, 1976-85," American Journal of Public Health, May 1988, Vol. 78, No. 5, Table 2, p. 508.

Table 29

Estimated percent distribution of pregnancies by outcome of pregnancy according to age of woman and race: United States, 1983

Pregnancy outcome and race	Age of woman							
	Total	Under 15 years	15-19 years	20-24 years	25-29 years	30-34 years	35-39 years	40 years and over
Estimated Percent Distribution								
All races								
All pregnancies	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Live birth	60.9	33.3	47.4	61.8	67.6	65.4	55.7	46.5
Induced abortion	26.4	55.8	39.9	29.2	19.3	18.0	24.1	36.6
Fetal loss	12.7	10.9	12.7	9.1	13.1	16.7	20.2	16.9
White								
All pregnancies	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Live birth	64.1	31.2	46.3	64.4	71.2	70.8	60.8	49.6
Induced abortion	23.9	57.7	40.6	26.8	16.1	15.4	22.3	37.4
Fetal loss	12.0	11.0	13.2	8.9	12.6	13.8	16.9	12.9
All other								
All pregnancies	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Live birth	50.8	34.9	50.1	53.6	53.9	47.2	40.6	38.4
Induced abortion	34.0	54.3	38.1	36.8	31.4	26.6	29.6	34.4
Fetal loss	15.2	10.7	11.7	9.6	14.7	26.2	29.8	27.3

Based on unrounded frequencies.

Source: Excerpted from S.J. Ventura, S.M. Taffel, and W.D. Mosher, "Estimates of Pregnancies and Pregnancy Rates for the United States, 1976-85," American Journal of Public Health, May 1988, Vol. 78, No. 5, Table 3, p. 509.

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Chapter V

Chronic and Acute Disease Conditions

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A. Introduction

1. Overview of Findings

Around the turn of the century, a change in basic mortality patterns marked the rise to prominence of chronic disease conditions as the primary cause of death. At that time, death rates from communicable diseases and the acute diseases of infancy, childhood, and the young adult years were declining substantially, leaving more survivors who would grow to middle and old age, the years when chronic conditions strike most frequently. Chronic disease conditions now constitute our leading health problem, an important indication that the level of health in the U.S. has improved markedly in this century. But certain categories of acute disease, notably pneumonia/influenza, septicemia, and some sexually transmitted diseases (STD), still constitute important and growing causes of death.

How does the burden of chronic and acute disease—occurrence of disease, days lost to incapacity, and years of potential life lost to death—impact different racial/ethnic minorities and family income levels? Is this burden shifting over time for these different groups? These questions are the subject of this chapter.

1.1. Chronic Disease Conditions

More than three-fourths of all deaths in the United States are caused by chronic diseases. About one-third of the years of potential life lost as a result of death are caused by chronic diseases.

Among chronic diseases, heart disease accounts for one-half of all deaths, and malignant neoplasms account for almost one third. No other chronic disease category accounts for more than one-tenth of the total. Chronic disease mortality for the total population of the United States has declined at a relatively rapid rate over time, particularly since 1950. But such rates of decline vary considerably by specific chronic disease, racial/ethnic group, and sex.

Age-adjusted mortality rates for almost all categories of chronic diseases are one-third to 2.8 times higher for Blacks than for Whites. The differentials for diabetes mellitus and for nephritis/nephrosis are especially large. The only exception is chronic obstructive pulmonary diseases (COPD), where the Black mortality rate is about 20 percent lower than the rate for Whites.

The age-adjusted mortality rate for heart diseases is about 40 percent higher for Blacks than for Whites. Mortality rates from heart diseases have declined for all population groups in recent years. The rate of decline for Black women has closely approximated that for White females since 1950, but still remains higher for Black women. Heart disease mortality for White males has declined more rapidly than it has for Black males, so the Black and White gap in death rates from this disease has widened in recent years.

For cerebrovascular diseases, the very substantial Black excess mortality, compared to Whites, rose among males but declined

among females in the last several decades.

Age-adjusted cancer incidence rates, for all sites of cancer, are higher for Blacks than Whites, and the survivorship of Blacks is poorer. The percent excess of Black cancer mortality rates over White rates generally rose for both sexes alike since 1950, but the Black and White gap increased more rapidly among males than females. This was true for most of the major sites of cancer. One important exception to this rising Black excess in deaths was evident for respiratory cancer mortality among females, which by 1986 hardly exceeded the White female rate.

The percent excess of Black mortality, compared with Whites, increased for diabetes mellitus and chronic liver disease and cirrhosis during this time period.

Studies conducted in a selection of census tracts in a single city found that apparent Black and White differences in mortality rates from heart disease could be completely accounted for by family income differences. For cerebrovascular diseases, however, mortality differences were entirely accounted for by race. For cancer (all sites), both family income and race contributed significantly to mortality rate differences.

Higher proportions of Black males than White males are current smokers, but this is not true for females. The prevalence of high-risk cholesterol levels is about the same for Blacks and Whites

among either sex. Both borderline or definite elevated blood pressure and overweight are more prevalent among Blacks than Whites, and this is true especially for females. (See Chapter III, Prevention, for more details.)

In general, Blacks are diagnosed and/or seek treatment later than Whites for many chronic diseases, and this may have significant implications for the efficacy of treatment and for survivorship for many chronic diseases. What is more, once under medical management or therapy, the treatment received by Blacks may be less aggressive than that received by Whites.

Compared with non-Hispanic Whites, Hispanics show lower age-adjusted mortality rates from all causes combined, and much lower mortality rates from most chronic diseases. There are two important and sizable exceptions: diabetes mellitus and chronic liver disease/cirrhosis. Within the Hispanic ethnic group, those of Cuban origin show lower age-adjusted mortality rates for virtually all chronic disease categories, compared to those of Mexican or Puerto Rican origin. Some evidence suggests that the mortality differentials between Hispanics and non-Hispanic Whites have been narrowing in recent years, as many recently migrated Hispanics become more acculturated and on average more affluent.

For American Indians and Alaskan Natives, mortality rates for diabetes mellitus, chronic liver disease/cirrhosis, and tuberculosis are two to three times higher

than the comparable age-adjusted rates for Whites.

1.2. Acute Diseases and Disability Conditions

The United States population generally experiences about 175 acute disease and injury conditions per 100 persons per year. Rates increased about 5 percent in the 1980s. Among acute disease conditions, respiratory diseases show the highest incidence rates. Children under age five experience nearly four times the number of acute conditions per year, compared with adults over 44 years of age. Females under five years of age have slightly lower acute condition rates than males of the same age, but for all other age groups the females' rates are somewhat higher. Overall, the rates of acute conditions for the lowest and highest family income categories are 10 percent to 20 percent higher than for the middle income groups. The incidence of acute conditions is about one-fourth lower for Blacks than for Whites in all categories. The Black and White differential did not change markedly between 1982 and 1988. Days lost to restricted activities and bed disability are similar for Blacks and Whites. Work days lost due to acute diseases is about one-fifth higher for Blacks, while school days lost is about three-fourths higher for Blacks than for Whites.

In the specific category of pneumonia and influenza, the death rate for Blacks is nearly 50 percent higher than for Whites. For septicemia, anemias, tuberculosis, and miscellaneous infectious diseases, the mortality rates for Blacks are 2.7 to 6 times those for Whites. However,

the excess of Black deaths over White deaths from pneumonia has dropped sharply over the past four decades. The pneumonia mortality rate for Hispanics of Puerto Rican origin is currently slightly higher than that for Blacks, but the rate for other Hispanics is at or below the White rates.

The mortality rate from tuberculosis for American Indians and Alaskan Natives is about four times the rate for the United States population as a whole.

2. Data Sources and Their Limitations

Some information needed to understand racial/ethnic and income differentials in disease incidence and impact is unfortunately not available. For instance, information on the impact of specific chronic disease categories on activity restrictions and days lost short of death is not available for different minority groups. (But overall activity restriction information for all causes combined, for older age groups, is presented in Chapter X, *Health of Older Americans*.)

Data on chronic and acute diseases for certain minority groups are either missing or are of limited accuracy. Hispanic Americans constitute a very diverse group, concentrated in certain sections of the country. Hispanics of Cuban origin, for example, exhibit very different socioeconomic and health characteristics from those of Mexican or Puerto Rican origin. Hispanics may consider themselves to be either Black or White, but most consider themselves to be White. Wherever possible, Hispanics are compared to non-Hispanic Whites. Information on Hispanics comes largely from regional rather than national surveys; this means among other

things that non-urban Hispanics are very likely underrepresented. Conversely, American Indians living in urban areas are very likely underrepresented in the available data. Asian/Pacific Islands groups constitute a very heterogeneous group, for which information on chronic and acute disease is not available on a national level.

The incidence and the impact of chronic diseases may vary significantly by family income and by educational attainment, but information of this kind is limited to small, perhaps not representative population groups. In general, it is not possible to estimate the extent to which the differences noted among different racial/ethnic groups are due to income and education effects.

Data presented in this chapter have been collected and compiled by the National Center for Health Statistics, the National Cancer Institute, the Indian Health Service, some state and local health departments, and from private (usually academic) investigators.

Two basic sources of data were used: disease-specific mortality rates, among the most reliable of all available health statistics, and morbidity information, including impairment and disability. The latter data may contain larger uncertainty or error components. Reasonably reliable time trend data are available as far back as 1950.

2.1. Classification of Chronic and Acute Disease Conditions

The following are considered to be chronic disease conditions: cardiovascular diseases,

malignant neoplasms (cancer), chronic obstructive pulmonary diseases (COPD), diabetes mellitus, chronic liver disease/cirrhosis, and nephritis/nephrosis. Pneumonia/influenza and septicemia are considered to be acute disease conditions. Certain other acute disease or disability conditions are discussed in other chapters. They include accidental injuries (Chapter VI), dental conditions (Chapter VIII), health problems related to pregnancy and childbirth (Chapter IV), and sexually transmitted diseases (Chapter VII).

2.2. Special Problems in Measuring Acute Disease Incidence Rates

National Health Interview Survey (NHIS) methodology defines acute conditions as those illnesses and injuries of less than three months' duration for which medical attention was sought or which resulted in restricted activity. (1) Conditions which meet the above criteria but which are generally considered chronic are excluded (see previous paragraph).

Criteria for restricted activity and medical attention are used by NHIS, in part to eliminate very minor acute conditions which have little or no impact on the respondent. The effect of these criteria, however, may be to introduce a socioeconomic bias into the data. This in turn may impact racial and ethnic group comparisons. Persons who lack income to pay for care or who are not aware that given symptoms require medical care may be less likely to obtain care for the same type of illness than would a less disadvantaged person. To remind the reader of this potential bias, data from this survey source will be referred to as "reported" incidence.

B. Major Chronic Disease Conditions Among Racial/Ethnic Groups

1. Mortality in the Total Population

Chronic disease conditions now cause more than three-quarters of all deaths in the United States. However, the exact proportions vary according to the category of specific chronic disease conditions, and by specific population groups. Table 1 presents data from the National Center for Health Statistics. (2) This table shows the numbers of deaths in the United States in 1987 due to major categories of chronic disease conditions. It also shows the age-adjusted mortality rates from these conditions.

As a group, the causes of death shown in Tables 1 and 2 accounted for 75.9 percent of the deaths of all persons from all causes in 1987. This proportion would surely be much higher if all chronic disease conditions resulting in death had been included, not just the major categories. Comparable figures for actual deaths for White and Black populations are 77.1 percent and 68.6 percent, respectively. The percentage figure is higher for Whites, mainly because this population contains higher proportions of the older age groups who are much more susceptible to death from chronic diseases than are younger populations. Age-adjusted mortality rates are higher for Blacks than for Whites in almost every chronic disease category.

Cardiovascular diseases and malignant neoplasms (cancer) cause the largest proportion of chronic disease deaths by far, for both races (Table 1). For deaths from all major chronic disease

categories combined, cardiovascular diseases account for 61 percent of the total for Whites, and 59 percent of the total for Blacks. The corresponding figures for cancer are 29 percent and 30 percent. Within the cancer category, respiratory cancer accounts for the largest number of deaths, followed by digestive sites, genital sites, and breast cancer. This rank order holds for both Blacks and Whites.

None of the other major categories of chronic diseases account for more than 5 percent of all chronic disease deaths, for either Blacks or Whites.

2. Mortality Rates by Race

Except for chronic obstructive pulmonary diseases (COPD), age-adjusted mortality rates for disease categories shown in Table 1 are higher for Blacks than for Whites. The magnitudes of the excess (as percent in excess of the White rate) are shown in the first column of Table 2. For all causes and both sexes combined, the Black rates exceeded the White by about 52 percent in 1987. By cause, the excess was highest for nephritis and nephrosis (176 percent) and diabetes mellitus (132 percent). Also, a very high excess was evident for cerebrovascular diseases (82 percent), chronic liver disease and cirrhosis (77 percent), and cancer of the genital organs (77 percent). The comparable excess was about 38 percent for diseases of the heart and 32 percent for cancer of all sites. Only for COPD was the Black rate lower than the White rate (-19 percent).

The second and third columns of the table show the comparable excess of Black rates over White rates, by

sex. Perhaps the most noteworthy departure from the both-sexes pattern is for respiratory cancer, where almost the entire excess is due to differences in the rates for males. In contrast, differences between the rates for Black women and White women accounted for the majority of the Black-over-White excess for diseases of the heart, diabetes mellitus, and nephritis/nephrosis.

Table 3 and Figure 1, using data from the National Center for Health Statistics, (3) show the time trend in age-adjusted mortality rates for these selected major chronic diseases for decennial years from 1950 through 1980, and for 1987. The rates for the total population only are also shown, since these are helpful as background in understanding time trends in rates by race and sex. The cause-of-death categories in Table 3 do not correspond precisely to those in Tables 1 and 2; Table 3 omits rates for major cardiovascular diseases and for nephritis and nephrosis, although these rates are shown in Tables 1 and 2. Table 3 also substitutes colorectal cancer for digestive cancer, and cancer of the prostate (male only) for genital cancer.

Perhaps the most noteworthy trend is the sharp decline over time in diseases of the heart, cerebrovascular diseases, pneumonia and influenza, and diabetes mellitus for the total population. Diseases of the heart decreased by 45 percent in the 37 years from 1950 to 1987 (an average annual decline of 1.2 percent), cerebrovascular diseases by 66 percent (average annual decline 1.8 percent), and diabetes mellitus by 31 percent. The

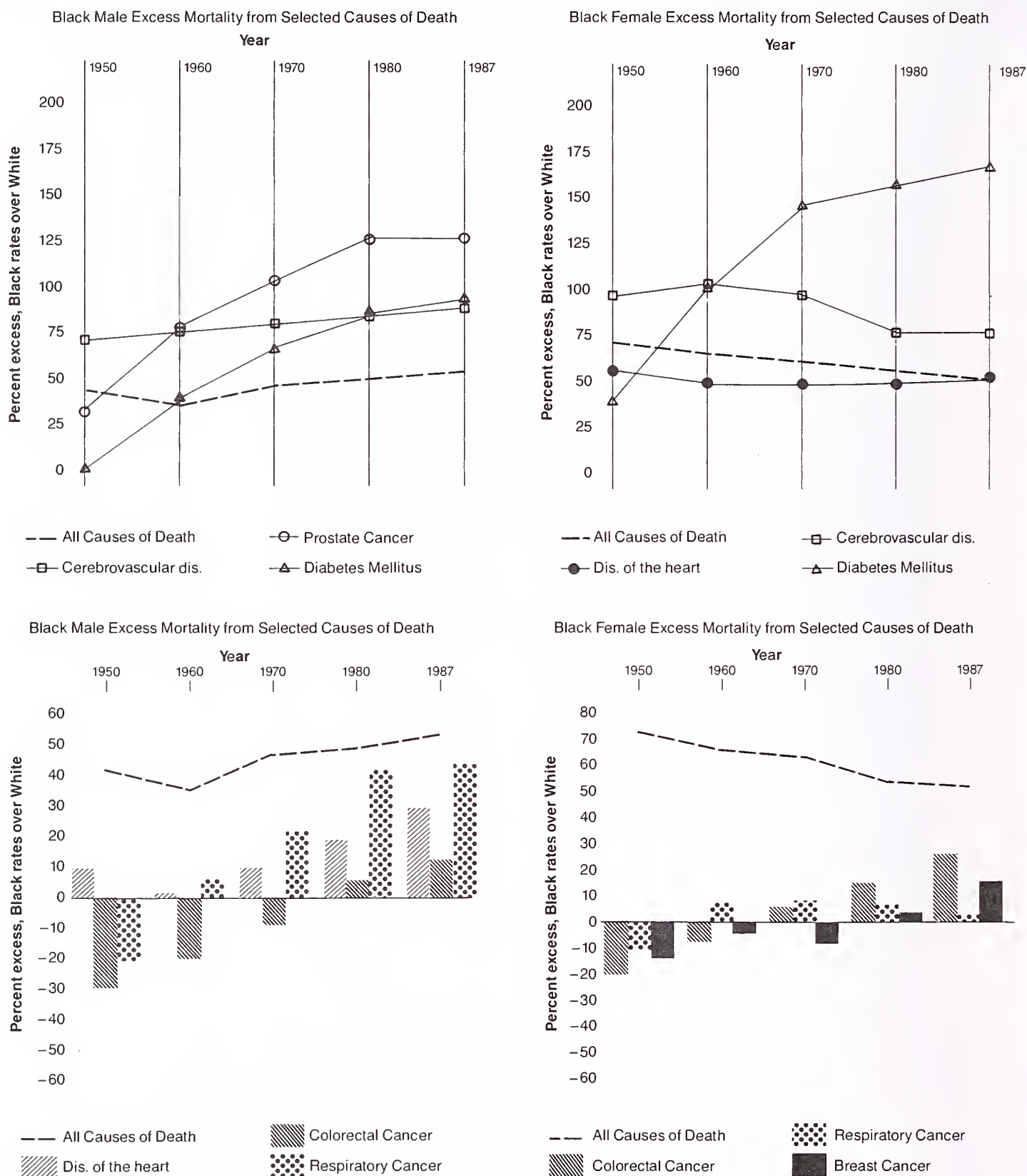
decline in heart disease and in the other three causes as well account for a significant proportion of the decline in all causes, which dropped by 36 percent from 1950 to 1987. In sharp contrast to these declines, the age-adjusted mortality rate for COPD increased 3.3 fold. Death rates from respiratory cancer increased 2 fold during the same time period.

Have the two races benefited equally from the declines in death rates and, conversely, have they been affected equally adversely by the increases? Table 3 details the trends in the magnitude of the excess of Black mortality rates over White mortality rates by sex. The trends differ by sex for all causes of death combined and for some of the major causes. The excess mortality of Black males, compared to White males, has become progressively greater for almost all major chronic diseases during the past 37 years. For Black females, the excess mortality compared with White females has decreased for all causes of death combined, but the excess has by no means disappeared. Moreover, since 1980 the excess mortality of Black females has increased for diseases of the heart and cerebrovascular disease. Since 1950, the advantage that the Black population had in lower rates of death for colorectal, respiratory, and breast cancer has either disappeared or changed to an excess compared with the rates for the White population. The substantial increase between 1980 and 1987 in the Black excess for breast cancer mortality is especially notable.

Overall, the declines in chronic disease mortality have been greater for Whites, so that they have been the chief beneficiaries. As a

Figure 1

Excess of Black Age-Adjusted Death Rates over White Rates for Selected Major Chronic Diseases by Sex: United States, 1950-1987.



Source: Compiled by the Division of Disadvantaged Assistance, BHP, based on data in Table 3 of this Chapter.

consequence, the overall race difference in mortality rates has widened. In those chronic disease categories where mortality rates have declined, the decreases have been more rapid for Whites; in those disease categories where overall rates have risen, the increases have been more rapid for Blacks.

3. *Mortality Rates by Income and Race*

As noted above, for most chronic disease conditions, mortality is substantially higher for Blacks than for Whites. But since Blacks have on average lower incomes than Whites, is the higher Black mortality due to their lower income or, even after controlling for the effects of income, is there still a residual race effect? This section of the chapter provides limited and tentative answers to this question for mortality from diseases of the heart, cerebrovascular diseases, and cancer, using data from Lerner and Henderson (4) and applying only to Baltimore City, Maryland, for 1984-86.

These data are ecological, i.e., the units of analysis are not individuals but census tracts. As a result, it becomes necessary to assume that census tract values for average income, mortality rates, and any other significant variables relate to each other in the same way that values of these variables for individual persons would relate to each other. Census tracts consist of geographically defined populations, intended to be relatively homogeneous. In Baltimore City, tracts average somewhat under 4,000 persons as enumerated in the U.S. Census of 1980. Data available by tract (from the Baltimore City Health Department) include: numbers of deaths by race,

sex, and age, coded for tract on the basis of the decedent's place of residence; and (from the United States Census): race, sex, age, and income distributions by tract. The mortality data, as coded for race by the Baltimore City Health Department, use the category non-White, and this usage is followed in the tables presented here. However, "non-White" was taken for study purposes to be essentially synonymous with "Black" in Baltimore City, since 97.6 percent of the population classified as non-White in the 1980 census was also classified as Black.

Table 4 shows estimated age-adjusted death rates for mortality from heart disease, using the Lerner and Henderson data. (4) For predominantly White tracts, the estimated age-adjusted mortality rate at a median household income level of \$8,000 was 352.7 per 100,000 population, dropping to 184.9 at \$35,000. For predominantly non-White tracts, the comparable rates were 349.1 at \$5,000 household income and 260.6 at \$30,000. The negative association of mortality with income was very strong and statistically significant within each group, and for both groups combined.

In low income tracts, non-White mortality rates were slightly lower than those for low income White census tracts. In higher income tracts, the mortality rates in White tracts were found to be lower than those for Black tracts by an ever increasing margin. Overall, however, no statistically significant effect of race was evident when income was accounted for.

Table 5 shows data from the same study (4) for

cerebrovascular diseases. For this disease group, a strong, statistically significant effect of race was found. Black mortality rates were much higher at each income level. When the data for all census tracts were combined, and race was omitted as a predictor of mortality, a significant income effect was also found. But this income effect is due to the on-average lower incomes of the non-White population. For this disease group, differences in mortality rates in these Baltimore tracts are due entirely to race and not income.

Table 6 shows the same type of data for cancer, all sites, also from a study by Lerner and Henderson. (5) Here the non-White rates exceeded the White at each income level to about the same degree. Clearly, race has a statistically significant effect upon cancer death rates for all cancer sites combined. It was found that family income levels also impact cancer death rates to a statistically significant degree, over and above the effects of race. This income effect was also found for each racial group separately. Thus for cancer, all sites, both race and income were factors in mortality.

Differences in the separate effects of race and income among the three diseases merit further investigation. Relevant factors in the differing roles of race and income in these diseases may include contrasting environmental conditions as well as possible differences in genetic inheritance. In this respect, note that the mortality rates for all three chronic disease groups studied in the Baltimore census tracts were much higher than the national averages.

4. *Cancer Incidence and Survivorship by Race*

A considerable body of data on cancer incidence and survivorship has now been accumulated in this country, derived largely from the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) Program. SEER maintains population-based registries in a number of areas in the United States, with much data available by race. The incidence and survivorship data from this source, and elsewhere, constitute an extraordinarily useful supplement to the mortality data considered earlier. Perhaps, subject to some exceptions, incidence rates may be significantly associated with biological factors and lifestyle-associated risk factors (cigarette smoking, diet, exercise, stress management, etc.). These risk factors may be amenable to change to some degree through prevention programs. Survivorship ratios, in contrast, may significantly reflect the success of the health services system in providing early detection, effective management, and therapy.

Table 7 shows cancer incidence rates in 1986 from the SEER Program (6) by sex and race for selected cancer sites, and the percent excess of Black rates over White. Considering first all cancer sites among males, cancer incidence rates among Blacks exceed the comparable White rates by 19 percent, while among females Black incidence is lower than White by 2 percent. With the possible exception of respiratory cancer, the excess of Black rates over

White rates is much lower for incidence than for mortality.

For respiratory cancer (lung and bronchus), among Black males, incidence rates exceed White rates by 60 percent, while among females the comparable excess is only 16 percent. The picture is generally mixed for many of the components of the broad rubric "digestive"; for example, for colorectal, Black rates exceed White among females, but among males the reverse is true. But Black rates exceed White rates among males for other components of the digestive system, e.g., cancers of the esophagus, stomach, and pancreas. Also notable are the Black excess in the incidence of prostate cancer and the White excess in female breast cancer.

Using data from the same source, Table 8 shows five-year relative cancer survival rates for 1980–85. These data suggest that cancer diagnosis comes at a later stage, and subsequent treatment is less effective for Blacks compared with Whites. For all sites combined, the survivorship of Whites was higher than that for Blacks. For males, Whites experienced a 45.6 percent five-year survival rate compared to 32.7 percent for Blacks. For females, the comparable figures are 56.1 percent and 44.3 percent. Note that survivorship for females is higher than for males, regardless of race.

Considered by specific site, White survivorship exceeded Black survivorship for almost all sites shown in Table 8. Where survivorship rates are very small for all groups, as in the case of cancer of the pancreas, esophagus, lung/bronchus, and stomach,

Black and White differences are relatively small. In a few categories, survivorship rates are substantial, but the Black and White differences are small; such is the case for cancer of the ovary, cervix uteri, non-Hodgkin's lymphoma, colon cancer and breast sites in females, and leukemia in males. The largest Black and White differences in survival are found for corpus uteri in women, and the oral cavity and pharynx in men.

5. *Risk Factors by Race*

Risk factors are characteristics of individuals believed to be associated with the onset, survivorship, and mortality from disease conditions, chronic or other. Some risk factors are related to habits, customs, and lifestyles, while others are related to prior and/or current illnesses and environmental and social conditions. Still others are thought to have a hereditary component. (7) (8) Some, although not all, risk factors are believed to be amenable to medical and/or societal intervention, whether in prevention, management, or therapy.

Four important risk factors often associated with many, although not all, major chronic disease conditions are cigarette smoking, elevated blood pressure, high-risk serum cholesterol levels, and overweight. Not all of these are believed to be specific even to all of the major chronic disease conditions discussed here. Nevertheless, all are probably related to general health status, and the latter in turn may be related to many chronic disease conditions, either in terms of the probability of incurring the condition or surviving with it.

Smoking rates are presented in Chapter III, Prevention. Briefly, national

survey data from the civilian non-institutionalized U.S. population show that rates of current smoking among White males dropped steadily from 51 percent in 1965 to 31 percent in 1987 and among Black males from 60 percent to 40 percent (see Table 9). The same rate among White females dropped from 35 percent to 27 percent and among Black females from 33 percent to 28 percent. A significant race difference continues to exist among males, where the proportion of current smokers among Blacks exceeds the comparable figure among Whites by 9.6 percentage points (Table 9). With respect to overweight, also a topic of discussion in Chapter III, there appears to be an absence of a significant race difference among males, but a substantially higher proportion of Black females are overweight, compared to White females (see Table 10).

In contrast with the downward trend in smoking rates, the proportion of people found to have borderline or definite elevated blood pressure has remained virtually unchanged for nearly three decades (see Table 11). This is found to be the case for Black, White, male, and female groups, but the proportion of Black males with this condition exceeds that for White males by seven to 11 percentage points; the proportion of Black females exceeds that of White females by 16 to 18 percentage points (Table 11).

Table 12 shows proportions of persons with high-risk serum cholesterol levels for three time periods. Black and White differences are found to be rather small. The proportion of younger Black males with high cholesterol levels is about 33

percent higher than for White males in the same age groups in 1976–1980. Higher proportions of older females of both races appear to show high levels of serum cholesterol.

Check (7) recently reviewed papers presented at the First National Interdisciplinary Conference on Hypertension in Blacks. The conference addressed this question: Do the higher prevalence of hypertension among Blacks and their greater likelihood of having a stroke result from some subset of genetic factors or from environment determinants? One presenter concluded that, "Blacks demonstrate a greater blood pressure increase at lower levels of sodium loading than Whites, as well as a greater retention of sodium." Another suggested that "high blood pressure in Blacks is due to genetic causes, modified by environment . . . an inherited superior ability to conserve salt." However, other papers (and other research) indicate that a high nutritional intake of calcium and potassium is an important protective factor against hypertension, and a high intake of sodium and salt retention is an important causative factor. Further, much research has shown that Blacks take in less calcium and potassium than Whites.

Wright (8) profiled hypertension in Black patients. He concludes that the Black hypertensive is more likely to die from the disease and more likely also to experience sequelae of the condition, i.e., stroke, end-stage renal disease, or heart failure. Further, contrary to previous beliefs and perhaps to an earlier actual reality, Blacks are at least as likely as Whites to have coronary artery disease, another condition associated with high

blood pressure. Compared to White hypertensives, Blacks with high blood pressure are typically characterized by a lower plasma renin, a larger plasma volume, and a greater salt sensitivity. (8) Black diets are apparently not excessively high in salt, but are deficient in calcium and potassium. The latter are believed to be implicated, but are unproven etiologies, in hypertension. Also implicated among Blacks are altered renal handling of sodium and cellular handling of sodium and calcium. Finally, overweight, like hypertension, is comparatively common in the Black community, especially in Black females (Tables 10 and 11), and the association between overweight and hypertension is well established.

In three papers analyzing data from the Minnesota Heart Survey, Folsom, Sprafka and associates (9) (10) (11) found that among urban Blacks (age 35 to 69), significant improvements in blood pressure measurements had taken place between 1973-74 and 1985. Mean systolic blood pressures in both sexes and diastolic blood pressure in men had declined. The proportion of men and women hypertensives on medication and under control increased. Cigarette smoking, however, had changed very little in overall prevalence, but the proportion of heavy smokers had decreased significantly in men. However, age-adjusted mean body mass and the prevalence of overweight increased significantly in both sexes. Concurrently with these risk factor trends, age-adjusted heart disease mortality rates in urban Blacks fell 27 percent between 1968-73

and 1979-84, and stroke mortality fell 58 percent. The investigators conclude that changing risk factors may be contributing to these declining mortality rates in Blacks, but overweight seems to be a worsening problem.

Comparing Blacks and Whites in 1985 and 1986 surveys, these investigators found that both systolic and diastolic blood pressure, adjusted for age and education, were 3-4 mmHg higher in Blacks, as was also the prevalence of hypertension (44 percent in Blacks, 28 percent in Whites). Black men had substantially lower total serum cholesterol (TC) than White men (13.6 mg/dl on average) and higher high-density lipoprotein (HDL) cholesterol (average 7.7 mg/dl). (HDL cholesterol assessment is important because it is considered to be protective against the deposition of plaque in the coronary arteries.) Black women also had better serum cholesterol than White women, although to a lesser degree (4.6 lower for TC and 2.5 higher for HDL). Larger proportions of Blacks than Whites were current cigarette smokers, although White smokers smoked on average a greater number of cigarettes per day. These investigators concluded that excess risk factor prevalence (hypertension and cigarette smoking) may explain the higher heart disease and stroke mortality rates of Blacks.

6. *Receipt of Health Services by Race*

The two factors probably most important in determining incidence, prevalence, and mortality from chronic diseases are the major risk factors, discussed in the preceding section, and the receipt of medical care provided through the health

services system. The health services system ideally should provide: early detection of diseases, especially where appropriate medical therapy at an early stage is believed to make a significant difference, as for many sites of cancer and for other chronic diseases; effective management, where harmful sequelae of a disease may be inhibited (e.g., in hypertension); and efficacious therapy, where disability and death may be avoided (e.g., heart disease and other chronic diseases).

Data for cancer and heart disease suggest that the benefits of the health services system may not be equally distributed by race. Thus for cancer, Table 13 shows the results of a study by Satariano and associates (12) of severity at diagnosis of female breast cancer in the Detroit Metropolitan Area by race and age. At ages 40 and over Black females were far less likely than White to be diagnosed as having breast cancer when the disease was local, far more likely to be diagnosed only after it had spread widely (remote stage).

This study finding is consistent with the data of Table 8, which showed 20 percent better five-year survivorship from breast cancer for White females than Black in the United States (SEER data). Better early detection of breast cancer among White females is probably characteristic of better early detection among Whites of both sexes for other cancer sites as well, and perhaps of the chronic disease conditions in general.

A recent study by Hayward and associates (13) showed that women who were uninsured or lower in socioeconomic status were

less likely than others to have been screened for cervical or breast cancer. Although these data were not reported by race, a similar Black and White differential can probably be assumed, given the generally lower socioeconomic position of Blacks in the United States. In another study by McWhorter and associates, (14) Black women with breast cancer were found to have received less aggressive therapy. They were more likely than White women to be treated non-surgically or to have no cancer-directed therapy at all, even after adjustment for age, stage, and histology. These treatment differences in turn strongly affected five-year survival, again after the above adjustments. Bassett and Krieger (15) reported that both race (Black and White) and social class strongly affected breast cancer survival.

Another study, by Mayer and McWhorter, (16) analyzed bladder cancer patients diagnosed during 1978-1985. Their results indicated that Black patients were more likely than White patients to go untreated following diagnosis of bladder cancer even after the effects of age, sex, tumor history, and stage-at-diagnosis were controlled for. The authors concluded "that differences in initial therapy may contribute to the survival differential between Black and White bladder cancer patients." (16)

For heart disease, Table 14 presents the results of an analysis by Ford and associates (17) of heart disease data by sex and race from the National Hospital Discharge Survey for 1979-84, for persons age 35 to 74 in the United States. Among males and females alike, the Black and White ratio was far

lower for coronary arteriography and coronary artery bypass surgery than for acute myocardial infarction. The implication is that Black hospital patients admitted for acute myocardial infarctions were less likely than Whites to receive either diagnostic arteriography or bypass surgery. But since the severity of the infarction is not taken into account in these data, this must be considered as at best suggestive only.

Another study suggesting substantial racial inequalities in the use of procedures for patients with heart disease, by Wenneker and Epstein, (18) analyzed all admissions in Massachusetts hospitals in 1985 for circulatory diseases or chest pain. After taking into account age, sex, source of payment, income, primary diagnoses, and the number of secondary diagnoses, significantly larger proportions of White patients received coronary angiography and bypass procedures. Larger proportions also received angioplasty, but the difference was not significant. The authors recognized their study limitations, suggesting that the racial differences may reflect patient preferences or different levels of severity or socioeconomic status not adequately accounted for.

Further confirmation of this inequality comes from the Coronary Artery Surgery Study, reported on by Maynard and associates, (19) in which patients were enrolled from 14 clinics in the United States and one in Canada from July 1974 to May 1979. Surgery was recommended for 47 percent of Black patients and 59 percent of White patients despite similar clinical and angiographic characteristics. Among those recommended for surgery, 81 percent of

Blacks and 90 percent of Whites had bypass operations.

Importantly, cost represents a formidable obstacle to all kinds of care, especially for Black and/or low income populations. In a 1981 survey in Georgia, Shulman and his associates (20) reported the prevalence of uncontrolled moderate or severe hypertension (diastolic equal to or greater than 105 mmHg) as 1.9 percent. A substantial proportion of all uncontrolled moderate/severe hypertensives reported experiencing economic barriers to the receipt of anti-hypertensive medication and medical care. However, these proportions were much greater for Blacks than Whites, with Black women reporting economic barriers more frequently than White women.

C. Major Chronic Disease Conditions Among Hispanic Americans

For a variety of reasons, far fewer health data are available for Hispanics than for Blacks, at both the national and state or local levels.

Table 15, from a study by Maurer and associates, (21) shows age-adjusted death rates for Hispanics and ratios to non-Hispanic Whites for selected major chronic diseases for 15 reporting states, 1979–81. The data are shown by sex and country of Hispanic origin (Mexico, Puerto Rico, Cuba). California, New Mexico, and Florida are not included in the reporting area. Despite the large proportions of Hispanics residing in these states, the data nevertheless appear consistent with other more limited but available data. They are shown here because they represent the only Hispanic mortality data

set available from more than a single state or area.

For all causes of death, age-adjusted mortality rates were lower for the Hispanic than for the non-Hispanic White population residing in the 15 states. The difference reached statistical significance among five of the six sex/country-of-origin groups shown in the table. Only the mortality rate for Puerto Rican males failed to show a statistically significant difference compared to the non-Hispanic White rate, although it is lower. Among the three groups of Hispanic origin, Cuban American mortality rates were by far the lowest, for both sexes combined and for each sex separately.

Considering first diseases of the heart—the leading cause of death—Hispanic rates were lower than non-Hispanic White rates in five of the six sex/country-of-origin groups (only among Puerto Rican females does the difference fall short of statistical significance). For cerebrovascular diseases and malignant neoplasms of all sites, all six of the Hispanic rates were lower than the non-Hispanic Whites, and at statistically significant levels. Thus, for the three most important chronic disease causes of death, Hispanic rates among the six sex/country-of-origin groups were almost all significantly lower, with only minor exceptions.

Hispanic age-adjusted death rates were lower than non-Hispanic White rates for COPD in four sex/country-of-origin groups. Puerto Rican females constitute a minor exception, and no rates are shown for Cuban American females because the data include too few deaths for the calculation of a reliable rate.

The opposite pattern is evident for diabetes mellitus and for chronic liver disease and cirrhosis. For these causes, death rates were significantly higher for Hispanics than for non-Hispanic Whites, both male and female. The excess Hispanic rates were much higher than the non-Hispanic White rates among Mexican Americans and Puerto Ricans, while among Cuban Americans, the numbers were too few for a clear picture. Although male Cuban American rates exceeded non-Hispanic White rates for both causes, the difference was too small for statistical significance, and among females, the numbers were too few to calculate a reliable rate.

For the three most important chronic diseases in terms of mortality rates—heart disease, cerebrovascular diseases, and cancer of all sites—death rates were significantly lower for Hispanics, compared to non-Hispanic Whites. However, the differences may have narrowed over the years as Hispanics have become more acculturated in this country and exposed to adverse risk factors and perhaps also adverse social and environmental influences.

To test this hypothesis, Savitz (22) studied cancer incidence among Hispanics and non-Hispanic Whites in the Denver Metropolitan Area for 1969–71 and 1979–81. The Denver Metropolitan Area was studied because its Hispanic population (defined as persons with Spanish surnames) consisted primarily of long-term residents, who therefore had been exposed to acculturation influences for a relatively long period of time.

The data, shown in Table 16, indicate that a narrowing has occurred in the

differential in age-adjusted incidence rates for cancer, all sites, and for some major sites. Thus, the incidence of cancer, all sites, among Hispanics in 1969–71, both males and females, was only 63 percent as high as among non-Hispanic Whites, but by 1979–81 these proportions had risen to 86 percent for males and 101 percent for females. Incidence among both ethnic groups increased over time, but the Hispanic increase was more rapid. A similar narrowing of the ethnicity differential occurred for colorectal, lung, and female breast cancer. Here also, age-adjusted cancer incidence rates increased over time for both groups, but again, more rapidly for Hispanics. For prostate cancer, the differential not only narrowed, but in 1979–81 the Hispanic rate slightly exceeded the non-Hispanic White rate (by 4 percent).

Stomach cancer rates have traditionally been higher among Hispanics than among non-Hispanic Whites, perhaps due to diet, and these data confirm this relationship. In 1969–71 Hispanic stomach cancer incidence was more than three times that of non-Hispanic Whites among males, and twice the non-Hispanic rate among females. But by 1979–81 this difference had narrowed by twofold for males, but widened to a threefold difference for females, compared with non-Hispanic Whites. Absolute mortality rates for stomach cancer generally declined during this time period, but rose slightly for Hispanic females.

Acculturation and longer U.S. residence among Hispanics, as with other ethnic groups, is usually associated with improved

social and economic status (SES) and an increase in older population age groups. Consequently, chronic disease rates should increase among high-SES Hispanics, compared to low-SES Hispanics. This is borne out by the results of a study by the City of Houston's Health and Human Services Department. (23) The data, in Table 17, show age-adjusted death rates by Hispanic origin for selected major chronic diseases according to residence in Houston's Primary Health Service Areas (PHSAs) or Secondary Health Service Areas (SHSAs) during 1984–86. PHSAs consist primarily of inner-city, lower-income areas, while SHSAs consist of areas located in the city's outer periphery where family incomes are higher. A cautionary note in interpreting these data is in order, in that HSAs are very large areas, so that some distortion in relationships may occur along "ecological fallacy" lines (attributing the characteristics of population aggregates and the relationships among them to individuals).

Considering only Hispanics, death rates were higher in SHSAs (high SES) than in PHSAs (low SES) for all causes of death, diseases of the heart, cerebrovascular diseases, and cancer, both all sites and respiratory (Table 17). The differential between the two areas was much greater for cerebrovascular diseases and cancer than for all causes and heart disease.

Among non-Hispanic Whites the opposite was generally true, a finding not surprising considering that many other studies have shown overall chronic disease death rates inversely related to SES in the White population. (24) Here, rates in PHSAs (low SES) were higher for deaths from all

causes and heart disease. But as was true for Hispanics, PHSA (low SES) rates were somewhat lower for cerebrovascular diseases and cancer. However, the two sets of HSA rates were much closer than was the case for Hispanics.

Markides and Coreil (25) have recently reviewed the health status of Hispanics in the southwestern United States, most of whom are Mexican Americans. They term it an "epidemiologic paradox" because they found the health status of Hispanics in the Southwest to be closer to that of other Whites than to Blacks, although the socioeconomic status of Hispanics is closer to Blacks. That is, the health status of Hispanics is better than expected on the basis of socioeconomic status alone.

The evidence on which they base this conclusion includes such key indicators as infant mortality, life expectancy, mortality from cardiovascular diseases and major types of cancer, and measures of functional health. But they find also that other indicators, such as diabetes and infectious and parasitic diseases, show Hispanics to be clearly disadvantaged relative to non-Hispanic Whites. These investigators suggest that cultural practices, family support, selective migration, diet, and genetic heritage are factors explaining the relative Hispanic advantage or disadvantage.

Stern and his associates (26) studied the decline from 1970 to 1980 in death rates from ischemic heart disease and acute myocardial infarction in Mexican American and non-Hispanic Whites in Texas. Considering the two ethnic groups by sex, death rates declined least for

Mexican American men. Mexican Americans, compared to non-Hispanic Whites, are less well informed about and less likely to adopt life style changes to reduce heart disease risk. (26) The authors speculated that this may explain the slower decline among Mexican American men, but they noted also that it fails to explain the apparently equal decline in Mexican American women compared to non-Hispanic Whites.

Diehl and Stern (27) studied the special health problems of Mexican Americans: obesity, gallbladder disease, Type II diabetes mellitus, and cardiovascular disease. They found that Mexican Americans are especially prone to the first three of these conditions, which are also high among American Indians. Their undue prevalence in both groups may result from the high level of genetic mixture between them over the past several hundred years, but environmental factors, probably dietary, may also have a strong effect.

Diehl and Stern also found that Mexican Americans are more likely to suffer from obesity of the trunk and upper body, a type commonly observed in diabetes. Mexican American women, but not men, have gallstones twice as frequently as non-Hispanic Whites, and Type II diabetes mellitus is two to two and one-half times as prevalent in Mexican Americans as in the general U.S. population. Further, such illness among Mexican Americans is usually more severe. Given their higher prevalence of obesity and diabetes, the authors found it somewhat surprising that cardiovascular mortality has not increased among Mexican Americans.

D. Major Chronic Disease Conditions Among Native Americans

As for Hispanics, relatively few health data were available in earlier years for American Indians as a separate racial category. Even today, this category is rarely coded on death certificates. But, in recent years, more attention has been paid to American Indian health, and more data have become available.

Table 18 presents data from the Indian Health Service, (28) the closest approximation available to national mortality data. It shows age-adjusted death rates in 1986 for American Indians and Alaska Natives in Reservation States. The data are shown for all causes of death, including the major chronic diseases. While the all-cause, age-adjusted death rate for American Indians and Alaska Natives is very close to the total U.S. population rate (551.4 and 541.7 per 100,000, respectively), the distribution by cause of mortality is very different. For the four disease categories which result in the largest numbers of chronic disease deaths in the United States, the age-adjusted rates for the Indian and Alaska Native population are lower than the rates for the U.S. population as a whole.

In contrast, mortality rates for certain other chronic diseases are more than twice as high for Indians and Alaskans than for the total U.S. population (Table 18). These chronic diseases are chronic liver disease and cirrhosis, diabetes mellitus, and tuberculosis.

Table 19 presents data from the Health and Environment Department for

one state, New Mexico. It presents the distribution of chronic disease deaths and age-adjusted death rates for Indians, Hispanics, and non-Hispanic Whites for New Mexico during 1985-1987. Because a different base was used to calculate age adjusted rates, the rates for Tables 15 and 19 are not directly comparable. However, the New Mexico data indicate that the mortality rates for cancer and for diabetes mellitus are substantially higher for Indians in this population than for American Indians/Alaska Natives nationally.

Table 20 shows time trends for mortality rates from diabetes mellitus for American Indians and Alaska Natives in comparison with the United States population as a whole. Although the death rates from this disease have *dropped* about 35 percent since 1950 for the population as a whole, the corresponding mortality rates for American Indians/Alaska Natives have *risen* about 20 percent in this same time period.

E. Major Acute Disease Conditions

1. Self-Reported Incidence of Acute Conditions Among the Total Population

In 1982, the annual incidence rate for all acute conditions for males was 155.9 per 100 males, and for females the rate was 171.6 per 100 females. By 1988, the rates of acute conditions were similar but slightly higher for both sexes. (29) (30) Based on data from the National Health Interview Survey, acute conditions included in the 1982 and 1988 incidence rates were distributed among the major acute disease categories in the following manner:

DISEASE GROUP (all ages)	1982	1988
	<i>Percent</i>	
Respiratory conditions	47.7	49.6
Infective and parasitic	11.2	12.7
Digestive system conditions	3.9	3.6
Injuries	16.3	14.0
All other acute conditions	20.9	20.1
Total acute conditions	100.0	100.0

As shown above and in Table 21, respiratory conditions continue to account for nearly one-half the incidence of acute disease conditions.

For all age groups and for both sexes, the incidence rate for acute conditions increased only about five percent between 1982 and 1988 (see Table 21). For both sexes, the incidence of acute conditions is highest among persons under five years of age; and decreases substantially with increasing age. (30) In 1988, persons under 5 years experienced 362.8 acute conditions per 100 persons, compared with only 108.3 acute conditions per 100 persons aged 45 years and over. (30) The reported incidence and rate per 100 persons of acute conditions was higher for females than for males at all ages, except under five years, in 1982 and 1988. (30)

2. Effects of Family Income Levels

As shown in Table 22, the overall incidence rates for acute conditions for the lowest and for the highest family income categories were 10 percent to 20 percent higher than for the middle income groups in both 1982 and 1988. People in higher income groups reported about 20 percent higher rates for infective and parasitic diseases than those for lower income groups in 1988.

3. Differences by Race/Ethnic Groups

In 1988, the incidence of all acute conditions was 181.1 per 100 Whites and 143.4 per 100 Blacks, a 20 percent difference (see Table 21). But the increase in rates for Blacks between 1982 and 1988 was twice that for Whites. For influenza, the White rate was 2.7 times the Black rate in 1982, and 1.7 times the Black rate in 1988.

Respondents of both races reported more days of disability associated with acute conditions in 1988 compared with 1982 (Table 21). There was an 8.6 percent increase in restricted activity days per 100 persons annually, a 2.8 percent increase in bed-disability days, a 13.3 percent increase in work-loss days, and an 11.0 percent increase in school-loss days per 100 members of the school-age population. For the latter two disability measures, the percent increases were significantly larger for Blacks (Table 21). In 1988, Blacks reported more bed-disability days and work-loss days associated with acute conditions than Whites. However, in both 1982 and 1988, Blacks reported fewer school-loss days and restricted activity days due to acute conditions compared with Whites.

Although Blacks had more bed-disability days and work-loss days than Whites, they reported fewer overall acute conditions. Bed-disability and work-loss days may be

regarded as an indication of the severity of a reported acute condition. This suggests that Blacks are more likely to report proportionately more severe acute conditions. Another possible explanation is that Blacks may have higher disability levels associated with acute conditions; i.e., although fewer, the episodes of acute conditions reported by Blacks result in more protracted disabilities. Finally, the lower reported incidence of acute conditions by Blacks concomitant with more work loss and disability days suggests that Blacks may delay seeking medical care.

F. Mortality Rates from Acute Disease Conditions

Mortality rates from acute diseases are much lower than those for chronic diseases. Nonetheless, pneumonia/influenza was the sixth leading cause of death in the United States in 1987. (2) This acute disease group also ranked sixth among all Blacks and among White males as a cause of death. (2) It was the fourth leading cause of death for White females. (2) Mortality rates from pneumonia are 58 percent higher for Black males, compared to White males (Table 23); the corresponding figure for females is 26 percent. For other acute diseases listed in Table 23, the Black mortality rates are two to six times as high as the corresponding White rates.

For Hispanics, the mortality rates for pneumonia and influenza vary markedly by country of origin (Table 15). For Hispanics of Cuban origin the figure was 70 percent of the non-Hispanic White rate in 1979-81. But for Hispanics of Puerto Rican origin, the

mortality rate was 58 percent higher than the rate for non-Hispanic Whites. The rates for Hispanics of Mexican origin were similar to those for non-Hispanic Whites.

For American Indians and Alaskan Natives, the mortality rate from pneumonia and influenza was about 10 percent higher than for the United States population as a whole in 1986. Most notable, the mortality rate for

tuberculosis among American Indians and Alaskan Natives was more than four times as high as the rate for the total population. (31)

G. Hospitalization for Acute Conditions

In 1985, hospitalization rates of selected acute conditions were lower for persons of other races than Whites for respiratory conditions, digestive

conditions, and diseases of the genito-urinary system (Table 24). The reason for this difference is not clear, although it may be related to a greater use of outpatient care by minorities. From 1968 to 1985, minorities had higher rates of hospitalizations than Whites for infective and parasitic diseases and for diseases of the skin and subcutaneous tissue.

Table 1

Number of deaths and age-adjusted death rates* for selected major chronic diseases, by race: United States, 1987

Cause of death	All races		White		Black	
	No.	Rate	No.	Rate	No.	Rate
All causes	2,123,323	535.5	1,843,067	511.1	254,814	778.6
Major cardiovascular diseases	963,611	210.6	853,480	203.6	100,921	292.8
Diseases of the heart	760,353	169.6	675,732	165.0	77,747	226.9
Cerebrovascular diseases	149,835	31.3	130,047	28.1	17,907	51.2
Malignant neoplasms, all sites	476,927	132.9	418,473	130.1	53,027	172.2
Digestive	117,436	30.7	101,519	29.3	14,016	44.3
Respiratory	134,983	39.7	119,072	39.1	14,622	50.0
Breast**	41,211	22.9	36,569	22.8	4,291	26.5
Genital organs	51,829	12.9	43,951	12.2	7,378	21.6
Chronic obstructive pulmonary diseases (COPD)	78,380	18.7	72,668	19.2	5,052	15.5
Diabetes mellitus	38,532	9.8	31,395	8.7	6,497	20.2
Chronic liver disease and cirrhosis	26,201	9.1	21,766	8.4	3,916	14.9
Nephritis and nephrosis	22,052	4.8	17,764	4.1	3,975	11.3

* Rates are per 100,000, age-adjusted by the direct method to the 1940 U.S. population.

** Female only.

Source: National Center for Health Statistics, Monthly Vital Statistics Report, Advance Report of Final Mortality Statistics, 1987, Vol. 38, No. 5, Supplement, Sep. 26, 1989, Hyattsville, MD. Department of Health and Human Services Pub. No. (PHS) 89-1120, Table 10, pp. 24, 25 and Table 12, pp. 28, 29.

Table 2

Percent excess of Black age-adjusted death rates* over White rates for selected major chronic diseases, by sex: United States, 1987

Cause of death	Percent excess, Black rates over White		
	Both sexes	Male	Female
All causes	52.3	53.1	52.6
Major cardiovascular diseases	43.8	33.7	59.9
Diseases of the heart	37.5	27.1	55.5
Cerebrovascular diseases	82.2	88.4	77.6
Malignant neoplasms, all sites	32.4	43.9	20.3
Digestive	51.2	55.0	48.3
Respiratory	27.9	43.7	2.1
Breast**			16.2
Genital organs	77.0	115.5	37.0
Chronic obstructive pulmonary diseases (COPD)	-19.3	-12.4	-30.7
Diabetes mellitus	132.2	92.6	163.0
Chronic liver disease and cirrhosis	77.4	81.8	78.4
Nephritis and nephrosis	175.6	153.0	197.0

* Rates are per 100,000, age-adjusted by the direct method to the 1940 U.S. population.

** Female only.

Source: National Center for Health Statistics, Monthly Vital Statistics Report, Advance Report of Final Mortality Statistics, 1987, Vol. 38, No. 5, Supplement, Sep 1989, Hyattsville, MD. Department of Health and Human Services Pub. No. (PHS) 89-1120, Table 12, pp. 28, 29.

Table 3

Age-adjusted death rates* for the total population, and percent excess of Black rates over White, by sex, for selected major chronic diseases: United States, 1950, 1960, 1970, 1980, and 1987

Cause of death	1950 **	1960 **	1970	1980	1987
<i>Total population rates</i>					
All causes	841.5	760.9	714.3	585.8	535.5
Diseases of the heart	307.6	286.2	253.6	202.0	169.6
Cerebrovascular diseases	88.8	79.7	66.3	40.8	30.3
Malignant neoplasms, all sites	125.4	125.8	129.9	132.8	132.9
Colorectal	19.0	17.7	16.8	15.5	14.4
Respiratory	12.8	19.2	28.4	36.4	39.7
Breast ¹	22.2	22.3	23.1	22.7	22.9
Prostate ²	13.4	13.1	13.3	14.4	15.0
Chronic obstructive pulmonary diseases (COPD)	4.4	8.2	13.2	15.9	18.7
Diabetes mellitus	14.3	13.6	14.1	10.1	9.8
Chronic liver disease and cirrhosis	8.5	10.5	14.7	12.2	9.1
<i>Male percent excess, Black rates over White</i>					
All causes	42.6	35.8	47.6	49.3	53.1
Diseases of the heart	9.0	1.5	8.1	17.9	27.1
Cerebrovascular diseases	68.0	75.8	80.5	85.0	88.4
Malignant neoplasms, all sites	-3.7	11.9	28.3	43.2	43.9
Colorectal	-30.3	-20.6	-8.5	4.9	³ 12.2
Respiratory	-21.8	5.8	21.8	41.4	43.7
Prostate ²	29.0	79.0	106.5	120.5	³ 119.6
Chronic obstructive pulmonary diseases (COPD)	—	—	—	-21.7	-12.4
Diabetes mellitus	1.8	39.7	66.9	86.3	92.6
Chronic liver disease and cirrhosis	-24.1	2.8	76.1	94.9	81.8
<i>Female, Percent excess, Black rates over White</i>					
All causes	71.6	65.2	62.3	53.5	52.6
Diseases of the heart	56.3	48.5	50.0	49.4	55.5
Cerebrovascular diseases	95.2	103.1	92.0	75.3	77.6
Malignant neoplasms, all sites	10.5	16.7	14.8	20.4	20.3
Colorectal	-21.1	-9.4	5.2	15.0	³ 26.7
Respiratory	-10.9	7.8	7.9	7.1	2.1
Breast ¹	-14.2	-4.9	-8.1	2.2	16.2
Chronic obstructive pulmonary diseases (COPD)				-31.5	-30.7
Diabetes mellitus	38.4	99.3	141.4	154.0	163.0
Chronic liver disease and cirrhosis	-1.7	34.8	104.6	105.7	78.4

* Rates are per 100,000, age-adjusted by the direct method to the 1940 U.S. population.

** Includes deaths of non-residents of the United States.

¹ Female only.

² Male only.

³ 1986 rates.

Source: National Center for Health Statistics, Health, United States, 1988, Department of Health and Human Services Pub. No. (PHS) 89-1232, Washington, DC: U.S. Government Printing Office; Mar. 1989, Table 22, pp. 62, 63. Original data from the National Vital Statistics System.

Table 4

Age-adjusted heart disease death rates* on the regression line for predominantly White and predominantly non-White census tracts at specified household income levels: Baltimore City, Maryland, 1984-86

Household income level (dollars)	White (N=67)	Non-White (N=75)	Percent excess, non-White over White
5,000		349.1	
8,000	352.7	338.5	-4.0
10,000	340.2	331.4	-2.6
15,000	309.2	313.7	1.5
20,000	278.1	296.0	6.4
25,000	247.0	278.3	12.7
30,000	216.0	260.6	20.6
35,000	184.9		

* Rates are per 100,000, age-adjusted by the direct method to the 1940 U.S. population. Predominantly White and predominantly non-White tracts are those tracts whose population is 90% or more of either race.
Source: M. Lerner and L.A. Henderson, "Income and Race Differentials in Heart Disease Mortality in Baltimore City, 1979-81 to 1984-86." Report on a grant from the American Heart Association, Maryland Affiliate, Inc., Table VI.2.

Table 5

Age-adjusted cerebrovascular disease death rates* on the regression line for predominantly White and predominantly non-White census tracts at specified household income levels: Baltimore City, Maryland, 1984-86

Household income level (dollars)	White (N=67)	Non-White (N=75)	Percent excess, non-White over White
5,000		57.9	
8,000	41.4	57.7	39.4
10,000	41.0	57.6	40.5
15,000	40.0	57.3	43.3
20,000	39.1	57.0	45.8
25,000	38.1	56.8	49.1
30,000	37.2	56.5	51.9
35,000	36.2		

* Rates are per 100,000, age-adjusted by the direct method to the 1940 U.S. population. Predominantly White and predominantly non-White tracts are those tracts whose population is 90% or more of either race.
Source: M. Lerner and L.A. Henderson, "Income and Race Differentials in Heart Disease Mortality in Baltimore City, 1979-81 to 1984-86." Report on a grant from the American Heart Association, Maryland Affiliate, Inc., Table VI.6.

Table 6

Age-adjusted all-sites cancer death rates* on the regression line for predominantly White and predominantly non-White census tracts at specified household income levels: Baltimore City, Maryland, 1984-86

Household income level (dollars)	White (N=67)	Non-White (N=75)	Percent excess, non-White over White
5,000		268.5	
8,000	221.0	261.8	18.5
10,000	216.0	257.4	19.2
15,000	203.6	246.3	21.0
20,000	191.1	235.2	23.1
25,000	178.6	224.1	25.5
30,000	166.1	212.9	28.2
35,000	153.6		

* Rates are per 100,000, age-adjusted by the direct method to the 1940 U.S. population. Predominantly White and predominantly non-White tracts are those tracts whose population is 90% or more of either race.
Source: M. Lerner and L.A. Henderson, "Cancer Mortality Among the Disadvantaged in Baltimore City by Income and Race; Update from 1979-81 to 1984-86." Final report on a grant from the American Cancer Society, Inc., Maryland Division, Table VI.5.

Table 7

Age-adjusted cancer incidence rates* by sex and race, and percent excess of Black rates over White for selected cancer sites: United States, 1986

Sex and site	White	Black	Percent excess, Black rates over White
<i>Male</i>			
All sites	423.4	502.0	18.6
Oral cavity and pharynx	15.9	23.7	49.1
Esophagus	5.1	20.9	309.8
Stomach	10.7	17.9	67.3
Colorectal	61.4	55.8	-9.1
Colon	42.3	41.2	-2.6
Rectum	19.1	14.6	-23.6
Pancreas	10.7	15.1	41.1
Lung and bronchus	80.3	128.1	59.5
Prostate	87.7	123.4	40.7
Urinary and bladder	31.5	16.2	-48.6
Non-Hodgkin's lymphoma	16.1	10.9	-32.3
Leukemia	12.9	9.6	-25.6
All sites shown (number)	332.3	421.6	
All sites shown (percent)	78.5	84.0	
<i>Female</i>			
All sites	332.3	325.5	-2.0
Colorectal	42.4	46.9	10.6
Colon	31.6	36.3	14.9
Rectum	10.8	10.5	-2.8
Pancreas	7.8	13.2	69.2
Lung and bronchus	37.0	43.0	16.2
Breast	107.3	93.3	-13.0
Cervix uteri	7.8	15.5	98.7
Corpus uteri	22.3	13.8	-38.1
Ovary	13.2	8.8	-33.3
Non-Hodgkin's lymphoma	10.8	6.2	-42.6
All sites shown (number)	248.6	240.7	
All sites shown (percent)	74.8	73.9	

* Rates are per 100,000, age-adjusted by the direct method to the 1970 U.S. population.

Note: Data based on National Cancer Institute's Surveillance, Epidemiology, and End Results Program's population-based registries in Atlanta, Detroit, Seattle-Puget Sound, San Francisco-Oakland, Connecticut, Iowa, New Mexico, Utah, and Hawaii. Source: National Center for Health Statistics, Health, United States, 1988, Department of Health and Human Services Pub. No. (PHS) 89-1232, Washington, DC: U.S. Government Printing Office, Mar 1989, Table 46, p. 91.

Table 8

Five-year relative cancer survival rates* by sex and race, and excess of White rates over Black for selected cancer sites: United States, 1980-85

Sex and site	White	Black	Excess of White rates over Black
<i>Male</i>			
All sites	45.6	32.7	12.9
Oral cavity and pharynx	52.9	25.5	27.4
Esophagus	7.4	4.7	2.7
Stomach	14.2	18.1	-3.9
Colon	55.0	46.9	8.1
Rectum	51.4	35.9	15.5
Pancreas	2.7	3.6	-0.9
Lung and bronchus	11.7	10.4	1.3
Prostate	73.4	62.8	10.6
Urinary and bladder	78.7	59.6	19.1
Non-Hodgkin's lymphoma	49.5	38.7	10.8
Leukemia	34.5	25.2	9.3
<i>Female</i>			
All sites	56.1	44.3	11.8
Colon	55.3	48.6	6.7
Rectum	54.6	42.9	11.7
Pancreas	2.6	6.2	-3.6
Lung and bronchus	15.7	14.7	1.0
Breast	76.3	63.5	12.8
Cervix uteri	66.9	59.3	7.6
Corpus uteri	83.4	52.0	31.4
Ovary	38.4	38.3	0.1
Non-Hodgkin's lymphoma	52.4	50.9	1.5

* Rates are based on follow-up of patients through 1986. The rate is the ratio of the observed survival rate for the patient group to the expected survival rate for persons in the general population similar to the patient group with respect to age, sex, race, and calendar year of observation. It estimates the percent chance of surviving the effects of cancer versus surviving other causes of death.

Note: Data based on National Cancer Institute's Surveillance, Epidemiology, and End Results Program's population-based registries in Atlanta, Detroit, Seattle-Puget Sound, San Francisco-Oakland, Connecticut, Iowa, New Mexico, Utah, and Hawaii. Source: National Center for Health Statistics, Health, United States, 1988, Department of Health and Human Services Pub. No. (PHS) 89-1232, Washington, DC: U.S. Government Printing Office, Mar 1989, Table 47, p. 92.

Table 9

Cigarette smoking by persons age 20 and over by race, sex, and age: United States, 1965, 1976, 1983, and 1987

Race, sex, and age	Percent of persons							
	Current smoker*				Former smoker			
	1965	1976	1983	1987	1965	1976	1983	1987
<i>White Male</i>								
20 and over **	51.3	41.0	34.7	30.7	21.2	30.7	32.0	32.6
20-44	58.5	46.8	38.8	34.3	16.9	20.5	20.5	20.4
45 and over	44.4	35.0	30.1	26.3	26.1	40.5	44.1	46.6
<i>Black Male</i>								
20 and over **	59.6	50.1	42.6	40.3	12.6	20.2	23.2	22.2
20-44	67.7	57.4	41.8	41.3	8.3	10.2	15.4	12.9
45 and over	52.3	42.3	42.9	39.5	17.0	30.0	30.6	32.0
<i>White Female</i>								
20 and over **	34.5	32.4	29.8	27.3	8.5	14.6	17.2	18.9
20-44	43.3	36.8	34.3	30.5	9.6	14.2	15.2	17.2
45 and over	25.1	26.7	23.6	22.7	7.4	14.6	19.2	20.9
<i>Black female</i>								
20 and over **	32.7	34.7	32.5	27.9	5.9	10.2	10.7	13.2
20-44	45.0	40.1	36.2	32.7	5.9	8.1	7.7	8.9
45 and over	20.6	28.3	28.1	22.7	6.0	12.4	13.4	17.4

* A current smoker is a person who has smoked at least 100 cigarettes and who now smokes; includes occasional smokers.

** Age-adjusted.

Note: Excludes unknown smoking status. Data are based on household interviews of a sample of the civilian noninstitutionalized population.

Source: National Center for Health Statistics, Health, United States, 1988, Department of Health and Human Services Pub. No. (PHS) 89-1232, Washington DC: U.S. Government Printing Office, Mar 1989, Table 51, p. 96.

Table 10

Overweight persons age 25–74, by race, sex, and age: United States, 1960–62, 1971–74, and 1976–80

Sex and age	Percent of persons					
	White			Black		
	1960–62	1971–74	1976–80	1960–62	1971–74	1976–80
<i>Both Sexes</i>						
25–74*	26.4	26.8	27.2	35.9	38.8	41.1
25–34	17.6	19.7	19.4	31.6	29.1	26.3
35–44	21.8	26.6	26.4	38.0	45.3	40.8
45–54	28.8	29.1	30.2	33.2	39.4	52.1
55–64	34.8	31.0	31.9	34.5	43.9	44.2
65–74	35.0	31.0	31.9	31.5	37.3	46.0
<i>Male</i>						
25–74*	25.1	26.0	26.7	24.1	27.6	30.9
25–34	21.4	23.6	20.9	34.3	26.1	17.5
35–44	22.4	28.9	28.2	28.6	39.3	40.9
45–54	29.3	28.2	30.5	18.5	22.4	41.4
55–64	28.5	24.9	28.6	20.1	25.6	26.0
65–74	24.8	23.1	25.8	**11.7	21.6	26.4
<i>Female</i>						
25–74*	27.3	27.4	27.5	47.3	47.8	49.5
25–34*	13.9	15.9	17.9	29.6	31.5	33.5
35–44	21.2	24.5	24.8	46.1	49.9	40.8
45–54	28.5	29.9	29.9	47.8	53.5	61.2
55–64	40.5	36.6	34.8	71.4	58.7	59.4
65–74	43.2	37.0	36.5	**47.8	49.2	60.8

* Age-adjusted.

** Based on fewer than 45 persons.

Note: Data are based on physical examinations of a sample of the civilian noninstitutionalized population. Overweight is defined for men as body mass index greater than or equal to 27.8 k/m², and for women as body mass index greater than or equal to 27.3 k/m². These cut-points were used because they represent the sex-specific 85th percentiles for persons 20–29 years of age in the 1976–80 National Health and Nutrition Examination Survey. Excludes pregnant women.

Source: National Center for Health Statistics, Health, United States, 1988, Department of Health and Human Services Pub. No. (PHS) 89–1232, Washington DC: U.S. Government Printing Office, Mar 1989, Table 57, p. 102.

Table 11

Borderline or definite elevated blood pressure for persons age 25–74, by sex, age, and race: United States, 1960–62, 1971–74, and 1976–80

Sex and age	Percent of persons					
	White			Black		
	1960–62	1971–74	1976–80	1960–62	1971–74	1976–80
<i>Both Sexes</i>						
25–74*	39.6	40.8	40.1	53.8	55.1	51.3
25–34	14.7	18.8	20.7	22.4	28.2	22.4
35–44	28.1	29.6	30.8	43.5	54.5	47.9
45–54	42.4	45.8	45.9	60.6	57.4	58.9
55–64	60.9	58.4	55.2	78.8	71.8	70.5
65–74	73.1	69.3	61.9	85.2	80.0	71.7
<i>Male</i>						
25–74*	42.8	45.4	45.9	53.6	55.9	52.8
25–34	22.3	27.2	31.5	31.9	33.6	31.5
35–44	37.0	36.0	37.6	44.2	60.5	53.8
45–54	46.0	53.0	52.0	56.3	53.3	50.9
55–64	58.3	58.9	57.6	74.8	67.5	71.7
65–74	65.0	64.0	60.6	**76.8	79.3	68.7
<i>Female</i>						
25–74*	36.5	36.4	34.6	54.7	54.6	50.1
25–34	7.6	10.8	10.4	16.1	24.2	15.1
35–44	19.8	23.6	24.6	43.0	49.9	43.4
45–54	39.1	39.1	40.1	64.8	61.0	65.8
55–64	63.3	57.9	53.1	82.8	75.3	69.4
65–74	79.8	73.4	63.0	**92.1	80.6	74.0

* Age-adjusted.

** Based on fewer than 45 persons.

Note: Data are based on physical examinations of a sample of the civilian noninstitutionalized population. Borderline or definite elevated blood pressure is defined as either systolic pressure of at least 140 mmHg or diastolic pressure of at least 90 mmHg or both, based on a single measurement.

Source: National Center for Health Statistics, Health, United States, 1988, Department of Health and Human Services Pub. No. (PHS) 89-1232, Washington, DC: U.S. Government Printing Office, Mar 1989, Table 54, p. 99.

Table 12

High-risk serum cholesterol levels for persons age 25–74, by sex, age, and race: United States, 1960–62, 1971–74, and 1976–80

Sex and age	Percent of persons					
	White			Black		
	1960–62	1971–74	1976–80	1960–62	1971–74	1976–80
<i>Both Sexes</i>						
25–74*	27.6	23.2	21.9	22.1	23.7	22.8
25–34	20.9	19.8	18.5	19.0	20.6	19.7
35–44	22.0	17.3	16.6	14.5	18.2	18.8
45–54	26.8	24.4	21.8	25.5	24.1	25.5
55–64	37.8	28.0	29.3	20.9	29.3	27.5
65–74	37.4	31.5	27.7	38.0	31.1	24.0
<i>Male</i>						
25–74*	25.1	22.0	20.1	17.1	22.7	23.4
25–34	24.7	22.8	18.7	16.3	22.3	24.8
35–44	27.7	22.2	20.1	13.4	23.7	24.5
45–54	26.1	24.6	20.8	21.1	20.4	25.3
55–64	23.9	19.3	22.4	13.7	23.0	22.1
65–74	20.7	19.5	18.4	**22.9	25.8	16.6
<i>Female</i>						
25–74*	29.7	23.9	23.4	26.8	24.6	22.3
25–34	17.3	16.9	18.4	20.8	19.4	15.6
35–44	16.7	12.7	13.3	15.5	14.1	14.3
45–54	27.5	24.1	22.7	29.9	27.2	25.8
55–64	50.6	35.8	35.6	**29.1	34.4	32.0
65–74	51.2	40.6	34.8	**50.1	35.1	29.5

* Age-adjusted.

** Based on fewer than 45 persons.

Note: Data are based on physical examinations of a sample of the civilian noninstitutionalized population. High-risk serum cholesterol levels are defined by age-specific cut-points of the cholesterol distribution: 20–29 years of age, greater than 220 mg/dl; 30–39 years, greater than 240 mg/dl; and 40 years and over, greater than 260 mg/dl. Risk levels defined by NIH Consensus Development Conference statement on lowering blood cholesterol, Dec. 10, 1984.

Source: National Center for Health Statistics, Health, United States, 1988, Department of Health and Human Services Pub. No. (PHS) 89–1232, Washington, DC: U.S. Government Printing Office, Mar 1989, Table 56, p. 101.

Table 13

Distribution of local, regional, and remote female breast cancer at diagnosis, by age and race: Detroit Metropolitan Area, Michigan, 1973–82

Age	Stage (percent at diagnosis)							
	All stages		Local		Regional		Remote	
	White	Black	White	Black	White	Black	White	Black
< 40	100.0	100.0	53.6	53.1	41.9	41.2	4.5	5.7
40–49	100.0	100.0	50.9	45.8	44.4	48.0	4.7	6.2
50–59	100.0	100.0	48.3	41.3	43.2	45.0	8.5	13.7
60–69	100.0	100.0	50.1	41.8	40.0	42.9	9.9	15.3
70–79	100.0	100.0	53.0	42.9	37.0	40.1	10.0	17.0
80+	100.0	100.0	50.8	40.8	36.1	38.2	13.1	21.0

Source: W.A. Satariano, S.H. Belle, and G.M. Swanson, "The Severity of Breast Cancer at Diagnosis: A Comparison of Age and Extent of Disease in Black and White Women," American Journal of Public Health, Vol. 76, No. 7, July, 1986, Table 1, pp. 779–782.

Table 14

Rates of coronary arteriography, coronary artery bypass surgery, and acute myocardial infarction for persons age 35–74, by sex and race: United States, 1979–84

Sex and procedure/condition	White		Black		Black:White	
	Rate	RSE (%)	Rate	RSE (%)	Ratio	RSE (%)
<i>Male</i>						
Coronary arteriography	330	2.7	176	9.6	0.53	10.0
Coronary artery bypass surgery	294	2.8	103	6.3	0.35	6.9
Acute myocardial infarction	833	1.7	641	3.4	0.77	3.8
<i>Female</i>						
Coronary arteriography	132	3.2	107	5.9	0.81	6.7
Coronary artery bypass surgery	71	3.8	34	7.9	0.48	8.2
Acute myocardial infarction	328	2.2	338	4.1	1.03	4.4

Note: Data are based on the National Hospital Discharge Survey. Rates are per 100,000, mean \pm approximate relative standard error [RSE].

Source: E. Ford, R. Cooper, A. Castaner, B. Simmons, and M. Mar, "Coronary Arteriography and Coronary Bypass Surgery Among Whites and Other Racial Groups Relative to Hospital-Based Incidence Rates for Coronary Artery Disease: Findings from NHIS," American Journal of Public Health, Vol. 79, No. 4, April, 1989, Table 1, pp. 437–440.

Table 15

Age-adjusted death rates for Hispanics, and ratio to corresponding rates for non-Hispanic Whites, by sex and country of Hispanic origin for selected major chronic diseases: 15 reporting States,* United States, 1979–81

Sex and cause of death	Mexico		Puerto Rico		Cuba	
	Rate	Ratio to White	Rate	Ratio to White	Rate	Ratio to White
<i>Male</i>						
All causes	634.0	0.90**	693.5	0.99	482.3	0.69**
Diseases of the heart	190.9	0.71**	212.1	0.78**	159.3	0.59**
Cerebrovascular diseases	35.8	0.92**	26.3	0.67**	21.5	0.55**
Malignant neoplasms, all sites	96.8	0.63**	107.0	0.70**	103.0	0.67**
Chronic obstructive pulmonary diseases (COPD)	9.6	0.37**	15.3	0.59**	8.7	0.33**
Pneumonia and influenza	14.8	0.97	24.1	1.58**	10.7	0.70
Diabetes mellitus	16.6	1.78**	16.7	1.80**	9.7	1.04
Chronic liver disease and cirrhosis	22.4	1.71**	59.8	4.56**	15.0	1.15
<i>Female</i>						
All causes	355.9	0.91**	366.4	0.93**	233.0	0.59**
Diseases of the heart	104.9	0.79**	138.5	1.04	82.3	0.62**
Cerebrovascular diseases	29.2	0.88**	23.1	0.70**	14.9	0.45**
Malignant neoplasms, all sites	74.2	0.72**	72.0	0.70**	64.7	0.63**
Chronic obstructive pulmonary diseases (COPD)	4.1	0.47**	9.7	1.11	—	—
Pneumonia and influenza	8.5	0.99	13.8	1.60**	5.2	0.60**
Diabetes mellitus	20.3	2.45**	16.4	1.98**	—	—
Chronic liver disease and cirrhosis	7.5	1.21**	13.2	2.13**	—	—

* Reporting states are: Arizona, Colorado, Georgia, Hawaii, Illinois, Indiana, Kansas, Mississippi, Nebraska, New York, North Dakota, Ohio, Texas, Utah, and Wyoming.

** Figure is significantly different from Whites at the 0.05 level.

— Too few deaths for the calculation of a reliable rate.

Note: Rates are per 100,000, age-adjusted by the direct method to the 1940 U.S. population. Hispanics are defined by race/ethnic origin indicated on death certificates.

Whites are defined as non-Hispanic Whites.

Source: J.D. Maurer, H.M. Rosenberg, and J.B. Keemer, "Preliminary Results from a Forthcoming NCHS Vital and Health Statistics Series Report entitled Deaths of Spanish Origin, 15 Reporting States, 1979–81," Presented at Annual Meeting, American Public Health Association, Boston, Mass., 1988.

Table 16

Age-adjusted cancer incidence rates* by ethnicity (Hispanic, non-Hispanic White) for selected cancer sites: Denver Metropolitan Area, Colorado, 1969-71 and 1979-81

Sex and site	1969-71		1979-81		Ratio of Hispanic to White	
	Hispanic	White	Hispanic	White	1969-71	1979-81
<i>Male</i>						
All sites	212.7	335.8	232.7	377.7	0.63	0.86
Stomach	31.6	9.9	18.3	8.7	3.19	2.10
Colorectal	20.0	45.3	48.1	55.2	0.44	0.87
Lung	23.1	57.0	45.6	68.9	0.41	0.66
Prostate	57.3	73.9	90.9	87.3	0.78	1.04
<i>Female</i>						
All sites	166.7	266.1	294.7	292.6	0.63	1.01
Stomach	11.0	5.3	12.4	4.2	2.08	2.95
Colorectal	13.7	35.7	35.2	39.2	0.38	0.90
Lung	8.1	11.6	16.9	22.6	0.70	0.75
Breast	39.6	81.6	61.9	88.8	0.49	0.70
Cervix	19.5	11.3	14.8	7.4	1.73	2.00

* Rates are per 100,000, age-adjusted by the direct method to the 1970 U.S. population. Hispanics are defined as Whites with Spanish surnames. Whites are defined as Whites with non-Spanish surnames.

Source: D.A. Savitz, "Changes in Spanish Surname Cancer Rates Relative to Other Whites, Denver Area, 1969-71 to 1979-81," American Journal of Public Health, Vol. 76, No. 10, Oct 1986, Tables 2 and 3, pp. 1210-1215.

Table 17

Age-adjusted death rates by ethnicity (Hispanic, White) for selected major chronic diseases by Primary and Secondary Health Service Areas (HSAs)*: City of Houston, Texas, 1984-86**

Cause of death and ethnicity	Primary HSAs	Secondary HSAs	Ratio of Primary to Secondary HSAs
<i>All causes</i>			
Hispanic	509.7	558.2	0.91
White	653.4	537.6	1.22
<i>Diseases of the heart</i>			
Hispanic	142.3	156.6	0.91
White	186.0	171.0	1.09
<i>Cerebrovascular diseases</i>			
Hispanic	26.6	37.9	0.70
White	34.2	37.5	0.91
<i>Malignant neoplasms, all sites</i>			
Hispanics	84.1	123.7	0.68
White	137.8	140.9	0.98
<i>Malignant neoplasms, respiratory</i>			
Hispanics	18.4	25.1	0.73
Whites	37.1	40.5	0.92

* Primary Health Service Areas consist primarily of inner-city, lower-income areas, while Secondary Health Service Areas consist of areas located in the city's outer periphery and with, on average, higher incomes.

** Averages of age-adjusted rates calculated separately for 1984, 1985, and 1986.

Note: Rates are per 100,000, age-adjusted by the direct method to the 1940 U.S. population. Hispanics are defined as Whites with Spanish surnames. Whites are defined as Whites with non-Spanish surnames.

Source: City of Houston, Health and Human Services Department, The Health of Houston 1984-86, Health Service Area Measures, Houston, Tex.: The Department, undated, Tables 3.4, 3.8, 3.9, 3.10, and 3.11.

Table 18

Age-adjusted death rates* for American Indians and Alaska Natives in Reservation States, and ratio to corresponding rates for total U.S. population, for selected major chronic diseases: United States, 1986

Cause of death	U.S. total	American Indian and Alaska Native	Ratio of Indian to U.S. total
All causes	541.7	551.4	1.02
Diseases of the heart	175.0	135.4	0.77
Cerebrovascular diseases	331.0	24.1	0.77
Malignant neoplasms, all sites	133.2	83.4	0.63
Chronic obstructive pulmonary diseases (COPD)	18.8	9.6	0.51
Diabetes mellitus	9.6	20.6	2.1
Chronic liver disease and cirrhosis	9.2	26.4	2.9

* Rates are per 100,000, age-adjusted by the direct method to the 1940 U.S. population.

Source: Department of Health and Human Services. Indian Health Service, "Trends in Indian Health, 1989," Table 4.9, p. 39.

Table 19

Number of deaths and age-adjusted death rates* by race/ethnicity, for selected major chronic diseases

Cause of death	Percent distribution			Age-adjusted rate		
	Non-Hispanic White	Hispanic	Indian	Non-Hispanic White	Hispanic	Indian
All causes	100.0	100.0	100.0	792.9	809.6	932.7
Diseases of the heart	31.0	23.9	13.6	246.6	216.9	162.9
Cerebrovascular diseases	5.9	5.9	2.7	48.2	54.1	33.1
Malignant neoplasms, all sites	22.9	18.0	12.1	174.7	155.1	134.3
Chronic obstructive pulmonary diseases (COPD)	6.5	3.1	1.3	50.6	29.1	—
Pneumonia and influenza	3.2	3.3	3.3	26.9	30.6	39.3
Diabetes mellitus	1.9	3.5	4.4	15.2	30.4	51.0
Chronic liver disease and cirrhosis	1.3	3.3	4.8	9.4	25.1	39.1
Nephritis and nephrosis	0.9	1.1	1.2	7.2	—	—

* Calculated from the figures provided in the source table.

—Rate not provided in source table.

* Rates are per 100,000, age-adjusted by the direct method to the 1986 U.S. population.

Source: State of New Mexico, Health and Environment Department, Selected Health Statistics, New Mexico 1987. Santa Fe, NM: The Department, May 1989, Tables 3.6 and 3.7.

Table 20

Age-adjusted diabetes mellitus death rates* for American Indians and Alaska Natives in Reservation States, and ratio to corresponding rates for total U.S. population: United States, selected years, 1955-86

Year	U.S. total	American Indian and Alaska Native	Ratio of Indian to U.S. total
1986	9.6	20.6	2.15
1985	9.6	22.9	2.39
1980	10.1	22.6	2.24
1975	11.6	20.8	1.79
1970	14.1	27.1	1.92
1965	13.5	25.4	1.88
1960	13.6	20.3	1.49
1955	13.0	17.0	1.31

* Rates are per 100,000, age-adjusted by the direct method to the 1940 U.S. population. Estimated population methodology for the American Indian and Alaska Native population revised in 1976. Maine, New York, and Pennsylvania included as reservation states beginning in 1979; Connecticut, Rhode Island, and Texas in 1983; and Alabama in 1984. Decennial Census population counts used for 1960, 1970, and 1980.

Source: Department of Health and Human Services. Indian Health Service, "Trends in Indian Health, 1989."

Table 21

Incidence of acute conditions, associated disability days, and persons injured, by race: United States, 1982 and 1988

Acute Conditions	Number of Acute Conditions Per 100 Persons Per Year								
	All Races			White			Black		
	1982	1988	% Change	1982	1988	% Change	1982	1988	% Change
All acute conditions	167.1	175.3	4.9	173.1	181.1	4.6	130.5	143.4	9.9
Infective & parasitic diseases	18.8	22.3	18.6	19.6	23.9	21.9	13.7	15.6	13.9
Respiratory conditions	79.7	86.9	9.0	83.2	90.0	8.2	56.6	67.0	18.4
Upper respiratory conditions	41.0	37.6	-8.3	41.5	37.6	-9.4	39.2	36.4	-7.1
Influenza	33.0	42.8	29.7	35.7	45.5	27.4	13.2	26.4	100.0
Other respiratory conditions	5.8	6.4	10.3	6.1	6.9	13.1	*4.2	*4.1	*
Injuries	27.2	24.6	-9.6	28.7	25.4	-11.5	19.9	19.9	0
All other acute conditions	34.9	35.2	.9	35.2	36.0	2.3	32.5	31.5	-3.1
<i>Days of disability associated with acute conditions</i>									
Restricted activity days	644.0	699.5	8.6	651.3	714.8	9.7	604.5	656.5	8.6
Bed disability days	295.5	303.7	2.8	292.2	303.1	3.7	316.0	332.1	5.1
Work-loss days (ages 18 & over)	**274.9	311.4	13.3	271.9	305.3	12.3	312.4	370.7	18.7
School-loss days (ages 5-17)	365.7	405.9	11.0	379.6	427.2	12.5	271.8	322.0	18.5

*Estimates for which the numerator has a relative standard error of more than 30% are indicated by an asterisk.

**For currently employed population.

Source: (1) National Center for Health Statistics. Current Estimates from the National Health Interview Survey, United States 1982, Vital and Health Statistics Series 10, No. 150. Department of Health and Human Services Pub. No. (PHS) 85-1578, Washington, DC, U.S. Government Printing Office, Sep 1985, Tables 1, 3, 16, 18, 26, 28, 36, 38, 46 and (2) National Center for Health Statistics. Current Estimates from the National Health Interview Survey, United States 1988. Vital and Health Statistics Series 10, No. 173. Department of Health and Human Services Pub. No. (PHS) 89-1501. Washington, DC, U.S. Government Printing Office, Oct 1989, Tables 1, 3, 16, 18, 26, 28, 36, 38, 46.

Table 22

Number of acute conditions per 100 persons per year, by family income and type of condition, 1982 and 1988

For All Ages	Less than \$10,000		\$10,000-\$19,999		\$20,000-\$34,999		\$35,000 or More	
Type of Condition	1982	1988	1982	1988	1982	1988	1982	1988
All acute conditions	182.2	199.2	165.4	166.4	176.6	174.5	160.1	184.7
Infective & parasitic diseases	19.6	19.8	18.2	21.9	20.7	22.9	18.2	26.5
Respiratory conditions	81.0	96.2	81.3	75.1	84.3	87.4	80.6	93.8
Digestive	8.0	9.6	7.6	7.7	5.6	5.5	6.0	4.8
Injuries	31.5	30.5	26.9	25.1	27.6	25.4	27.9	24.2
All other	42.1	43.3	31.5	36.7	38.4	33.3	27.4	35.4

Source: (1) National Center for Health Statistics. Current Estimates from The National Health Interview Survey, United States 1982, Vital and Health Statistics Series 10, No. 150. Department of Health and Human Services Pub. No. (PHS) 85-1578, Washington, DC, U.S. Government Printing Office, Sep 1985, Table 4 and (2) National Center for Health Statistics. Current Estimates from The National Health Interview Survey, United States 1988, Vital and Health Statistics Series 10, No. 173. Department of Health and Human Services Pub. No. (PHS) 89-1501, Washington, DC, U.S. Government Printing Office, Oct 1989, Table 4.

Table 23

Mortality rates for selected acute diseases, by race and sex, 1987

	Age-Adjusted Death Rates, * Selected Acute Diseases					
	White		Black		Black/White Ratio	
	Male	Female	Male	Female	Male	Female
Pneumonia	16.7	9.6	26.4	12.1	1.58	1.26
All other infectious parasite diseases	10.4	1.8	30.1	8.3	2.89	4.6
Septicemia	4.5	3.4	12.5	9.1	2.8	2.7
Anemias	0.8	0.6	2.6	2.0	3.0	3.0**
Tuberculosis	0.5	0.2	3.1	1.0	6.0	5.0**

*Rates are per 100,000 population, age-adjusted by the direct method to the 1940 U.S. population.

**The figures are calculated based on data of limited accuracy. Therefore, computation to a further significant figure is not justified.

Source: Compiled from National Center for Health Statistics Monthly Vital Statistics Report, Advance Report of Final Mortality Statistics, 1987, Vol. 38, No. 5, Supplement, Sep 1989, Department of Health and Human Services Pub. No. (PHS) 89-1120, Table 12, pp. 28, 29.

Table 24

Number and percent ¹ of patients discharged from short-stay hospitals, by category of first-listed diagnosis of selected acute conditions by race, United States, 1968, 1979, and 1985

Category of First Listed Diagnosis & ICD Code	1968					1979					1985				
	White		All other		Ratio All other/ White	White		All other		Ratio All other/ White	White		All other		Ratio All other/ White
	No.	%	No.	%		No.	%	No.	%		No.	%	No.	%	
Infective & parasitic 1968 (000-136); 1979 & 1985 (000-139)	238	1.1	47	1.6	1.46	444	1.6	85	1.9	1.19	514	2.0	129	2.5	1.25
Respiratory (selected)											732	2.9	124	2.4	.83
Acute upper respiratory (460-465)	304	1.4	34	1.2	0.86	220	0.8	39	0.9	1.12					
Pneumonia (480-486)	535	2.5	86	3.0	1.2	573	2.1	102	2.2	1.05					
Acute bronchitis & bron- chitis (466)	148	0.7	13	0.4	0.57	180	0.7	27	0.6	0.86					
Digestive (selected)															
Appendicitis (540-543)	262	1.2	26	0.9	0.75	220	0.8	23	0.5	0.62	192	0.8	28	0.5	0.64
Cholelithiasis (574)	397	1.8	21	0.7	0.39	357	1.3	38	0.8	0.62	382	1.5	54	1.1	0.73
Diseases of the genito-uri- nary system (580-629)	2,059	9.5	274	9.4	1.21	2,650	9.7	426	9.3	0.96	2,005	7.9	379	7.4	0.94
Diseases of the skin & sub- cutaneous tissue (680- 709)	299	1.4	48	1.7		448	1.6	83	1.8	1.12	370	1.5	93	1.8	1.20
All diagnoses (acute & chronic)	21,629		2,907			27,451		4,572			25,363		5,116		

¹ Percents do not add to 100 because only selected diseases are included in the table. For example, 1.1 percent of all White discharges in 1968 had infective and parasitic diseases as first-listed diagnoses, 98.9 percent were for all other diagnoses, acute or chronic.

Source: (1) National Center for Health Statistics. "Inpatient Utilization of Short-stay Hospitals by Diagnosis: United States, 1968," Vital and Health Statistics Series 13, No. 12, p. 36; (2) National Center for Health Statistics. B.J. Haupt, "Utilization of Short-stay Hospitals: Annual Summary for the United States, 1979," Vital and Health Statistics Series 13, No. 60, Table 14, pp. 37-38; (3) National Center for Health Statistics. E.J. Graves, "Utilization of Short-stay Hospitals, United States, 1986, 1986 Annual Summary," Vital and Health Statistics Series 13, No. 96, Table 10, pp. 32-33.

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Chapter VI

Injuries

A. Introduction

1. Overview of Findings

The regularity that can be observed in injury death data has prompted a change of attitude toward injury prevention, particularly among public health professionals. What were once considered random, unavoidable "accidents" have increasingly come to be seen as predictable and preventable public health problems. (1) This is no less true for disadvantaged groups. In fact, the greater dimensions of the injury problem in these populations afford significant opportunities to reduce mortality and morbidity by applying appropriate and effective injury control programs.

Available data for racial minorities and the majority population suggest that Blacks and Native Americans experience considerably greater risk of death from injuries than the general population. For Black Americans, the categories in which differentials are significant include: homicides, fires and burns, drownings, and pedestrian fatalities. In fact, homicide, as the discussion below will show, is a far bigger factor in the injury mortality picture for Blacks and Hispanics than for the population at large, and it is responsible for a large proportion of the overall mortality differential between Whites and racial minorities. (2) Native American males have much higher motor vehicle death rates than White males and, in some years, have had somewhat higher suicide death rates.

Data regarding injury deaths for Asians, the Hispanic ethnic minority, and for low-income persons are generally unavailable.

Among children under 15 years of age, Blacks and Native Americans have higher injury fatality rates than Whites; in the case of Native American children, the risk is approximately twice that of Whites overall and is even greater in several categories of injuries.

Deaths on the job are another area in which Blacks incur disproportionate risk when compared to Whites. Races other than White as a group also experience higher rates of workplace injury deaths than do Whites. Homicides comprise a much larger fraction of workplace injury deaths for racial minorities than for Whites.

Although the problem of injuries is serious, it is declining in severity. Since mid-century, there has been a 40 percent decline in the age-adjusted unintentional injury death rate. In the past 36 years, the disparity in unintentional injury death rates between Whites and racial minorities has narrowed somewhat, but for Black males no change in the gap is evident. Furthermore, although Black males' homicide differential, when compared to Whites, has decreased by half over the past 36 years, the Black-to-White differential remains higher for homicide than for any cause of injury death. As for nonfatal intentional injuries, Blacks and Hispanics are considerably more likely than Whites to incur injuries due to criminal acts.

Hospital utilization and ambulatory visit data also

suggest the relative dimensions of the injury problem for Blacks and Whites. In recent years, Blacks were more likely to be hospitalized for most categories of injuries, and injury-related visits to doctors in offices were a slightly larger proportion of total visits for Blacks as compared to Whites.

The population differences in injuries are thought to reflect racial and ethnic disparities in income, education, type of employment, and other socioeconomic factors correlated with exposure to hazards, but accurate data to test this are not available.

Any review of recent mortality statistics makes clear the central role of injuries as a major risk factor in the U.S. Although serious injuries can affect anyone, death and disability from them are especially common among certain minorities and among low-income groups. Growing understanding of the problem's pervasiveness and of effective interventions have been accompanied, especially in recent years, by increased attention from government officials and from researchers. (3) Even so, the amount of attention may not yet be commensurate with the magnitude of the problem. (4)

2. Data Sources and Their Limitations

Vital statistics coding distinguishes unintentional from intentional injury deaths. Two other categories, injuries in which the intentionality cannot be determined and

injuries due to war, are also used, but in 1987 they accounted for only 0.14 percent of all deaths, and 2 percent of injury deaths. (5)

Unintentional injury deaths account for nearly two-thirds (63.4 percent) of injury fatalities. (5) Almost all of the remainder are comprised of intentional deaths due to suicide and homicide, including homicides resulting from legal intervention (e.g., police action). Most of the available data report deaths due to legal intervention in the homicide category (legal intervention accounts for about 1 percent of the homicides category). (6) Unless specified otherwise, the data reported in this chapter conform to this practice.

The data reviewed in this chapter are primarily mortality data, which form the bulk of the reliable documentation of injuries among various population groups. Morbidity data would show a far more extensive impact of injuries on populations than mortality data because only a small proportion of injuries leads to death. However, injury-related morbidity data for the groups of interest in this report are very limited.

Racial differences in injuries are examined in this chapter, to the exclusion of ethnic and income differences, because data on the Hispanic minority and on the income or educational attainment of injured persons are generally not available. Most data available for race groups permit comparisons among Whites, Blacks, and Native Americans. With the exception of data for Native American children reported in

Waller, Baker, and Szocka (7), information concerning Native Americans mentioned herein refers to American Indians and Alaska Natives in Reservation States, as compiled by the Indian Health Service in its publication *Trends in Indian Health, 1989*.

The discussion below begins by reviewing the current scope of the injury death problem, and then turns to overall unintentional injury mortality. Next, for the two fundamental classes of unintentional injury deaths—motor vehicle-related and non-motor-vehicle related deaths—differences among race-specific death rates are presented. The chapter then covers specific subcategories of non-motor-vehicle unintentional injury mortality that have special significance for minorities. Intentional injuries—homicides and suicides, and injuries sustained by crime victims—are then discussed. Finally, data showing trauma-related utilization of health services are reviewed.

B. Unintentional Injury Mortality

Unintentional injuries caused an estimated 96,000 Americans to lose their lives in 1988 (Table 1). The fatal unintentional injury rates, however, vary considerably by race. For Whites and all other races, 1987 data show comparative age-adjusted rates of 33.9 and 39.7, respectively. For Black males, the age-adjusted rate was 66.8 per 100,000; for Black females it was 21.0 (Table 2). Among Native Americans in Reservation States, the 1986 rate was 83.2.

Children under age 15 have much lower injury-

related mortality rates from all injuries—both intentional and unintentional—than adults. At this age, according to an analysis of 1980–85 data by Waller, et al., the four race groups—White, Black, Native American, and Asian/Pacific Islander—experience varied risks of death from injuries (Table 3). Blacks and Native American children under 15 have nearly twice the injury death rate of White and Asian/Pacific Islander children (Table 4). Native American rates were higher than White rates in all injury categories (twice as high for motor vehicle occupant, house fire, and homicide). For Black children, rates were higher in all categories except motor vehicle occupant, and were more than three and one-half times as high for house fires and homicides.

The long-term trend has been a decrease in unintentional injury deaths since the turn of the century. The age-adjusted index published by the National Safety Council suggests there has been a 59 percent drop in the unintentional injury death rate between 1903 and 1988. (8) If the injury death rate is disaggregated by cause, two important but divergent factors emerge—the motor-vehicle-related rate, which increased about tenfold between 1910 and 1930, and has changed relatively little since then, and the non-motor-vehicle-related rate, which decreased 71 percent between 1910 and 1980. (4) However, despite growing numbers of vehicles in recent years, the problem of motor vehicle fatalities appears to be responding to legal and policy initiatives, especially improved vehicle safety standards, aimed at reducing the death toll. (9) Overall, motor vehicle deaths were 48.9 per 100,000 registered

vehicles in 1960 but, by 1987, they had decreased to 24.9 per 100,000. (10)

Breaking down the motor vehicle-related death rate by type of fatality reveals a shift in the locus of the problem. Between 1960 and 1987, car-occupant and pedestrian deaths declined in absolute numbers and per capita, but motorcyclist deaths increased from 790 fatalities to 4,036, as motorcycle registrations increased nearly ninefold. (11) Therefore, although death rates per registered motorcycle have dropped about 40 percent over the two decades, motorcycle crash deaths now account for 8.4 percent of motor vehicle fatalities, up from 2.1 percent in 1960. (12) Many motorcycle fatalities could be prevented by effective helmet use laws. (13) In addition to the great increases in numbers of motorcycles, expanded numbers of four-wheel-drive utility vehicles (also known as multipurpose vehicles) have resulted in increased fatal injuries associated with their use, (14) partly offsetting improvements in car-occupant and pedestrian deaths. As will be shown later, motor-vehicle-injury deaths, the most important factor in injury deaths for the population at large, have a less dramatic impact on Black Americans, and a more severe one on Native Americans.

1. Mortality from All Unintentional Injuries by Race and Ethnic Group

In 1987, among Whites, unintentional injuries claimed the lives of 53,936 males and 25,874 females. Among minorities as a group, 10,880 males and 4,330 females lost their lives to unintentional injury. Among Blacks, male

and female injury death victims numbered 9,159 and 3,618, respectively, and among other minorities, 1,721 and 712, respectively. (5) Between 1979 and 1987 the age-adjusted unintentional injury death rate for the entire population fell by 19 percent. (The first year for which U.S. mortality data coded according to the International Classification of Diseases, Ninth Revision, were available was 1979.) Injury-related per-capita years of potential life lost (YPLL) before age 65 declined 21 percent between 1979 and 1986, which was larger than the average rate change for all causes (–13 percent) (Table 5).

Age-specific rates for total unintentional injury deaths in 1986 (the latest year for which rates by detailed age breakdowns are published) are shown in Table 6. Unintentional injury death rates for all racial categories and both sexes are far higher in the 70 and over age categories than for other age groups. The total-population rates indicate that minority groups as a whole, as well as Blacks within them, are subject to unintentional injury deaths approximately as frequently as Whites. However, the overall rates mask age differences; White Americans 15 to 24 years of age have higher rates than minorities, because motor-vehicle-crash deaths rise dramatically for Whites at this age. Whites 85 and over also have relatively higher rates than minorities of a similar age. But in the remaining age groups, the rates are higher for all other groups and for Blacks. For children under one year of age, minority children's injury death rates are at least twice as high as White children's.

Sex- and age-specific injury death rates reveal

contrasting differentials for males and females (Table 6). Proportionately, minority females overall appear to experience slightly fewer injury deaths compared to White females, whereas minority males experience more. In nearly all age groups, the race differential is greater for males than for females, and this is especially true for the Black population. The total unintentional injury death rate for Black males exceeds that for White males by 18 percent. However, minority females in many age groups are at considerable excess risk of death by injury compared to White females, with the differential as high as 110 percent among all minority female infants. Among Black female infants specifically, the differential is even greater, 130 percent in the 1986 data. Minority and Black female children between the ages of one and nine appear to experience a greater excess of injury deaths over their White counterparts than do minority and Black males.

Income and education are also sources of variation in unintentional injuries. It is not possible to present national death data showing their effects, because national mortality data do not record income or education. However, national injury incidence data taken from household interviews of the civilian noninstitutionalized U.S. population in the National Health Interview Survey (NHIS) suggest that individuals in the lowest-income families (less than \$10,000 per year) are more likely to sustain injuries than persons in the other income groups. (15) This same data source does not, however, show a higher self-reported injury incidence for Blacks

than Whites, (16) even though mortality and crime victimization data suggest Blacks are at higher risk. These discrepancies may stem from limitations of the NHIS questionnaire or sampling frame. (For discussion of household survey limitations, see Chapter I, Introduction.)

Evidence for income-related differences in unintentional injury mortality has been found in an analysis of area-specific injury deaths in 1977-79, in which Baker, O'Neill, and Karpf showed that mortality declined with increases in the area's per capita income. Moreover, according to the authors:

"Some of the differences among races in injury rates may be related to economic status. When race and per capita income of area of residence are considered together, death rates from all unintentional injuries are about the same for Blacks and Whites. Both groups have an inverse relationship between income levels and death rates. . . . Asians have the lowest death rates in all income groups and, as with other races, show an inverse relationship between death rate and per capita income [of area of residence].

"Native Americans have the highest death rates, with especially high rates in low-income areas. Unlike the other racial groups, the trend of lower death rates in high-income areas is reversed for Native Americans, in part because many Native Americans live in Alaska, where cost of living, per capita income, and injury death rates are extremely high." (4)

Thus, explanations for the associations between race

and injury death are likely to be found in the study of the interrelated socioeconomic and physical environments of disadvantaged groups, particularly as they beget specific types of hazardous conditions that can lead to injury death. For example, Native Americans have high motor-vehicle mortality rates in part because many reside in remote rural areas, where roads are less safe, because they may travel long distances to carry on basic activities, and because they often drive older vehicles, which are more prone to failures and meet fewer safety standards than newer ones. (17) Native Americans also have high rates of alcoholism, an important factor in motor vehicle accidents (see Chapter IX, Mental Health, for further discussion of alcoholism).

Differences in the past 35 years between Whites and all other races have declined over the period, as indicated by the ratios of minority to White death rates in Table 2. In 1950, for both sexes and as well as the sexes considered separately, the rate for "all other" was about 30 percent higher than that for Whites; this differential increased to slightly more than 40 percent in 1960 and 1970. By 1980, the "all other races" differential had fallen considerably, to levels below the 1950 differential. Data for 1987 show a 17 percent racial disparity in unintentional injury rates overall, and, by sex, a difference of 25 percent for males, and 9 percent for females.

The largest racial differential for the years listed in Table 2 is for Native Americans in comparison to Whites, followed by the Black

male/White male differential. The rate among Native Americans and Alaska Natives, at 83.2 per 100,000 in 1986, is more than 140 percent higher than the rate among Whites for the same year, 34.5 per 100,000. As large as this difference may seem, it was considerably larger in 1960, when the Native American rate was nearly 300 percent higher. Accordingly, the Native American and Alaska Native fatal injury death rate has declined nearly twice as fast as Whites' since 1960 (55 percent vs. 28 percent).

Between 1950 and 1987, for White males, Black males, and White females, the percentage decrease is similar (39 percent, 37 percent, and 39 percent, respectively), while Black females experienced a greater-than-average decline (45 percent). After peaking in 1970, the differential in Black male/White male fatal unintentional injury rates is now the same as it was in 1950—30 percent higher for Black males. The race differential among females has declined from 26 percent in 1950 to 13 percent in 1987.

2. Motor Vehicle-Related Mortality

The category of motor vehicle accident deaths is defined as "deaths involving mechanically or electrically powered highway-transport vehicles in motion (except those on rails), both on and off the highway or street." Events in this category include collisions of motor vehicles with other motor vehicles (e.g., cars, trucks, motorcycles, buses, tractors), with fixed objects, and with pedestrians, railroad trains, pedal cyclists, and other collisions (animals, street cars), as well as non-collision motor vehicle accidents. (12)

Such details of the vehicle type and collision event are meaningful information. Baker et al. suggest that "a common and misleading oversimplification is to talk about motor vehicle crashes as if all were similar events. Many types of motor vehicle crashes occur . . . and generally the people involved in different kinds of crashes have different characteristics." (4)

Motor vehicle-related fatalities account for approximately half of unintentional injury deaths. They are the leading cause of injury death for the U.S. population and, considering all causes of death, they are the leading cause for each five-year age group from 1 to 34. (4) In addition, in 1980–81, approximately one-third of all work-related injury deaths involved motor vehicles. (4) Alcohol use figures prominently in motor vehicle-related deaths. Data from the National Highway Traffic Safety Administration suggest that about half of the 48,290 crash deaths in 1987 were alcohol-related. These fatalities accounted for 55.3 percent of all motor-vehicle-related years of potential life lost before age 65. (18)

The population-wide annual crude death rate from motor vehicle injuries varied between approximately 21 and 27 per 100,000 between 1950 and 1981. (8) Since 1982 it has been slightly below 20 per 100,000 (Table 7). These averages mask considerable variations across population subgroups—such as sex and age groups, income levels, race, geographic area, and other groups. Differences in the amount and mode of travel among the groups help explain the variation. (4) For example, partly due to differences in amount and

type of exposure, males are close to three times as likely as females to be fatally injured in a motor vehicle crash (Table 8).

The motor vehicle-related crude death rate among Black Americans has generally remained between 80 percent and 90 percent of that among Whites in the recent 10-year period 1978–87 (Table 7). Native Americans had age-adjusted motor vehicle death rates that were 2.4, 2.2, and 2.4 times that of Whites in 1981, 1985, and 1986, respectively. (19) Thus, motor vehicle fatalities are a greater problem among Native Americans than among other racial groups. The 1987 age-adjusted rates for Whites, all other races, and Blacks, respectively, were 19.8, 17.9, and 17.9. (5)

As a group minority males were about as equally likely as White males to lose their lives from motor vehicle crashes (see Table 8). Minority females were less likely than White females to die from motor vehicle-related injuries. Furthermore, for most age groups, minority males were actually more likely than White males to die from motor vehicle crashes. Three important exceptions were the age categories from 10 to 24 years, where the death rates for White males, are much higher than the rates for the Black or "all other" categories. The same basic pattern is evident in the data published by the Public Health Service for the years 1980 and 1982–85 (data not shown). (20)

Comparison of the 1984–86 Native American age- and sex-specific motor vehicle fatality rates with the same rates for the total U.S. population in 1985 results in

a pattern different from the Black-White comparison. Black females' age-specific rates were usually very similar to or below White females', but Table 9 (using a smaller number of age intervals) shows that for all age groups except 65 to 74 and 85 and over, Native American females' rate relative to the total female population was higher and, in several age groups, it was at least 200 percent higher. Among males, Native American death rates were consistently higher than those of the total male population, with differences ranging from 20 percent up to 430 percent.

Whereas Blacks are less likely than Whites to die in motor vehicle crashes generally, in the subcategory pedestrian fatalities, Blacks are considerably more likely to lose their lives. A Centers for Disease Control (CDC) analysis of 1984 mortality data has shown pedestrian deaths to be among the causes of injuries with the largest Black-White rate disparities. The 1984 death rates for Blacks compared to Whites were 60 percent, 80 percent, 20 percent higher for both sexes, males, and females, respectively. (21) The reasons for the race differential are poorly understood; one hypothesis is that car ownership is less frequent, and walking more frequent, among Blacks. According to the CDC, "Blacks ages 15 to 19 years had a lower [pedestrian fatality] rate than Whites of the same age (1.9 vs. 3.0). At all other ages, Blacks had higher rates than Whites. The rates for Blacks and Whites declined from infancy to ages 10 to 14 years. This decline began at an older age group for Black children (5 to 9 years) than for White children (0 to 4 years) and ended at an older age for Blacks (15 to

19 years) than for Whites (10 to 14 years)." (21)

3. *Mortality from Non-Motor-Vehicle Unintentional Injuries*

While motor vehicle deaths constitute roughly half of all unintentional injury deaths for the White population, they constitute a lower percentage of all unintentional injury deaths among minority populations as a whole, as the data in Table 10 indicate.

Conversely, deaths from causes other than motor vehicle injuries (such as fires and burns, drownings, and falls) constitute a higher percentage of unintentional deaths among minorities than among the White population. The age-adjusted death rate for all non-motor-vehicle related unintentional injuries was 55 percent higher for racial minorities than for the White population (21.7 per 100,000 population compared with 14.0 per 100,000) in 1987 (Table 11). Native Americans have a higher differential (relative to Whites) than Blacks. As of 1986, the Native American death rate from all non-motor-vehicle injuries was 141 percent higher than that for Whites.

Comparing 1950 and 1987, the relative risk of death from non-motor-vehicle unintentional injuries has increased slightly for minorities as a whole, with more substantial increases for Black males and females, but a very large decrease for Native Americans. The death rates were, in 1950 and 1987, respectively, 46 percent and 80 percent higher for Black males than for White males, and 41 percent and 71 percent higher for Black females than for White females. However,

in the intervening years, the relative risks for Black males and Black females have been even higher. In 1970 the death rate was 92 percent higher for Black males, and in 1980, it was 83 percent higher for Black females (Table 11).

Comparison of the sex- and age-specific rates in Tables 8 and 12 suggests that with few exceptions, race differentials in mortality from non-motor-vehicle unintentional injury exist throughout most of life. The risk among Native American males is the highest of any race-sex group; in all age groups shown, the Native American male rate exceeds the Black male rate.

4. *Selected Categories of Non-Motor-Vehicle Unintentional Injuries*

Fires and burns, drowning, and falls are important causes of unintentional injury deaths in the U.S. population as a whole, with minorities having death rates from these causes exceeding those of the majority population. Occupational injury deaths are another area in which minorities have relatively high death rates, according to recently developed data from the National Institute on Occupational Safety and Health (NIOSH). Occupational injuries are not customarily classified as a cause of injury death per se, but efforts have been made to identify and describe such deaths from information contained in the death certificate.

4.1. *Fires and Burns*

Fires, burns, and deaths associated with fires were the third leading cause of unintentional injury death in the United States in 1986. (12) This injury mortality category "includes death from fires, burns, and from injuries in conflagrations—

such as asphyxiation, falls, and being struck by falling objects." (12)

Burn deaths can also occur in ways other than those just defined, however, and some fire and burn deaths are intentionally caused. Table 13 includes injury deaths from the following categories: fire and flames (i.e., burns and other injuries resulting from fires) (ICD-9 codes E890–E899); explosive material (E923); hot substance or object, corrosive material and steam (E924); electric current (E925); and suicides and homicides in which burns and scalds caused death (E958.1, E958.2, E958.4, E968.0, E968.3).

Table 13 shows that Blacks and other minorities experience divergent risks of death from these various burn and scald injuries. On an age-adjusted basis, Black males are 173 percent more likely than White males to die from these causes, and the excess among Black females compared with White females is even larger—240 percent. Thus, unlike several other injury categories discussed in this chapter, the Black excess is smaller for males than for females. On the other hand, males and females from racial minorities other than Black have a risk of death from burns and scalds only three-quarters as large as the White majority.

Racial comparisons by age indicate particularly large Black and White differences for Black female children up to age nine; for Black male adults, especially those in middle age and older; and, to a lesser extent, Black male children up to age nine. The rate comparisons for other minorities were based on very small numbers of deaths.

Residential fires are responsible for most deaths from fires and flames. These fire deaths come from conflagrations (uncontrolled fires in private dwellings), which is the largest category, clothing ignitions, and other fires in homes. Blacks are at notably higher risk of death from this cause when compared with other race groups (Table 14). In 1978, Black Americans were nearly three times as likely as Whites to die in such fires, and in each of the following six years, the death rates equalled or exceeded three times those of Whites'. A positive differential for Blacks as opposed to Whites exists for the 1978–84 period in all age groups. (22) Other minorities as a group were at equal or lower risk of death from residential fires when compared with Whites in this period. According to Gulaid et al., "Between 1978 and 1984, the residential fire-related death rates decreased for all three groups: 19 percent for Blacks, 25 percent for Whites, and 25 percent for others." (22)

Among children less than 15 years old, residential fires were the third leading cause of unintentional injury death in 1980–85, following motor vehicle and drowning fatalities. Black and Native American children were at increased risk of death from house fires, in comparison to Whites. Native American children less than 15 years old were approximately twice as likely as White children in this age group to die in house fires, while Black children had 3.75 times the risk (Table 4).

Time trends in fire-related fatalities in children present a disturbing picture. A published analysis of changes in injury death rates among children ages one to nine found, amidst a

generally declining trend in mortality from 1972–74 to 1982–84, a notably weak decline in children's death rate from fire and flames (ICD-9 codes E890–899). Furthermore, fire deaths declined faster for White children than for Black children. (23)

In their analysis of the 1978–84 data on residential fires, Gulaid, Sattin, and Waxweiler commented on possible explanatory factors for Blacks' high risk of death from house fires, mentioning poverty, less frequent ownership of smoke detectors, and residence in older buildings, in rural areas, and in locations "where the service of a fire department is delayed or unavailable." (22)

4.2. *Drowning*

There were 4,777 drowning deaths in the United States in 1986. Because there was a similar number of poisonings (4,731), drowning barely surpassed poisonings as the fourth leading cause of death from injury. (6) In the period 1978–84, the average annual number of drownings was 6,503. (24)

As shown in Table 15, Black males are nearly twice as likely as White males to die from drowning. Black females, as well as minority males other than Blacks, are about 50 percent more likely to die from this cause than their White counterparts. Minority females other than Blacks have the smallest excess, 29 percent.

The death rate from drowning declined over the 1978–86 period in all race groups shown in Table 16. The mortality rate decline was slightly larger for the two minority groups than for Whites. However, at the end of the period, the drowning

death rate was still higher for minorities—86 percent higher among Blacks, and 52 percent higher among other minorities.

4.3. Falls

Falls are the second leading cause of injury death in the United States. When the total population in each of the race groups White, Black, and all other races is considered, deaths from falls are considerably less likely among racial minorities. Overall, Black mortality from falls is approximately one-third lower, and other minorities' mortality nearly two-thirds lower, than that of Whites, according to death rate data for 1978–1984 analyzed by the Centers for Disease Control (CDC). (25) However, deaths due to falls are highly concentrated among older Americans, who are less likely to be members of minority groups than the population generally (see Chapter X, Health of Older Americans). The 1984 death rate from falls for all persons 65 to 74 years old is 6.8 times that of the population under 65, and for people 75 to 84 it is 25 times higher. When the CDC analyzed age- and sex-specific rates for falls for Whites versus all other races, except for males ages 5 to 29 and 75 and over, minority males had higher death rates than White males. Minority females of all other races had higher death rates than White females until the age of 65 years, with exceptions in a few age groups. After age 65, minority females had the lowest race- and sex-specific death rate from falls. After age 75, the death rate for White females exceeded that for males and females of all other races. (25)

Falls in 1980–85 were the seventh leading cause of injury death among children under age 15, after motor vehicle-related injuries, drowning, house fires, homicides, suffocation, and unintentional firearm-related deaths. (7) Falls are more likely to kill children who are members of racial minorities than White children. The average annual death rate from falls was 0.4, 0.7, 0.6 and 0.9 per 100,000 for White, Black, Native American, and Asian children age 0 to 14 in the U.S. during 1980–85 (Table 3).

4.4. Occupational Injury Deaths

Nonfatal work injuries are very frequent in the working population generally—approximately 7.9 per 100 full-time-equivalent workers in 1985 (26)—but data to assess racial differentials are not available. This subsection presents information about annual deaths due to an injury which occurred at work during 1980–85. These data were gathered from death certificates by the National Institute for Occupational Safety and Health (NIOSH), which computed population death rates using Bureau of Labor Statistics annual average employment data by race for the denominator. (27) The death certificates were identified using three criteria:

- age at death 16 years or older;
- cause of death coded as injury (including all types, whether intentional or not), reported as immediate, underlying, or contributory; and
- a positive response to the "injury at work" item.

Limitations of the data set stem primarily from reliance on the third identifying criterion, resulting in recognized but unquantified underreporting. (27) For

example, it is likely that worker deaths from motor vehicle injuries are underreported; in such cases the death certificate often omits the "injury at work" code. (28)

The average annual number of occupational injury deaths identified by NIOSH for the period was 6,670—5,791 for Whites, 733 for Blacks, and 146 for other racial minorities. This count departs from figures of the Bureau of Labor Statistics, whose total estimate was 3,610 for 1986, and of the National Safety Council (NSC), whose 1988 total estimate was 10,600. Variations in definitions, coverage, data sources, and estimation methods are responsible for the differences. (12)

NIOSH found that for the period 1980–85, fatality rates were higher both for Blacks (7.7 per 100,000 workers) and for other races (7.6 per 100,000) than for Whites (6.5 per 100,000). (27) One likely reason for the racial disparity is that occupational injuries are highly dependent upon the job and industry category of the workers at risk. Considering these factors in the data tabulation could narrow the differential, to the extent that minorities work in more hazardous occupations.

Workplace homicides are subject to underreporting for several reasons described by NIOSH. (27) NIOSH estimates based on the death certificates suggested homicides account for two to three times as many deaths per 100,000 workers among Blacks and other minorities as among Whites. Homicides account for approximately one-quarter of workplace injury deaths among racial minorities, but only 11

percent among Whites. The estimates are indicative of a considerably elevated risk of death from homicide on the job among minorities, as is found in the data for homicides occurring in all places (discussed in the following section).

C. Intentional Injuries

1. Homicide

Homicides can be classified into three types. The first may be described as "planned killing that is consciously acceptable to the perpetrator at the time." (29) This is commonly referred to as premeditated murder. It represents, however, only a small fraction of all homicides. The second type of homicide occurs as an emotional response, not consciously planned, to a conflict that may have extended over a period of time. The third type of homicide is committed as an act of self-defense by a law enforcement officer or an individual. About 80 percent of all homicides belong to the second category. Roughly 65 percent of all homicides of the first and second types occur among persons who know each other. (29)

The age-adjusted mortality rate for homicide was 8.6 per 100,000 in 1987 (Table 17). Homicide accounted for 1 percent of all deaths, ranking it twelfth among the leading causes of death. (5) However, in terms of years of potential life lost (YPLL) before age 65, data for 1985 show that homicide alone (i.e., excluding legal intervention) accounted for 5.2 percent of the total. (30) In 1984, homicide ranked sixth among the leading causes of YPLL. (31)

The risk of homicide varies dramatically among segments of the population. Males account for three-quarters of

the homicide-attributable YPLL. (30) Homicide is considerably more likely in early adulthood than at other ages (Table 17). When Blacks and Whites are compared, the differential in homicide death rates is the largest by far of any of the leading causes of death. For 1987, the Black-to-White ratio of age-adjusted homicide death rates was 6.0, whereas the next-largest ratio was 3.2, for human immunodeficiency virus infection (AIDS). (5) In 1987, among males alone, minorities overall were 5.7 times more likely than Whites to be homicide victims (Table 18).

When the race differences are analyzed by age, some age groups exhibit even larger gaps than the population-wide averages. In 1987, age-specific homicide mortality rates, expressed as deaths per 100,000 population, were highest among persons 15 to 24 years of age (14.0), 25 to 34 years of age (15.1), and 35 to 44 years of age (10.8) (Table 17). As shown in Table 18 (which excludes deaths from legal intervention), for the Black male the homicide rate for all ages is 544 percent higher than the White male rate, but for men of the ages 25 to 39 years, the Black excess is as high as 665 percent. Among Black females, the homicide rate for all ages is 305 percent higher than the White female rate, but it rises to approximately 400 percent in age groups 25 to 29 and 30 to 34.

Minority males and females other than Black had homicide rates that were, respectively, 25 percent and 34 percent higher than Whites. The male differential with Whites rises to between 40 percent and 50 percent at

ages 15 to 19 and 20 to 24. The female differential reaches nearly 60 percent at ages 20 to 24 and 30 to 34. Most of the other large rate differentials for minorities other than Black were based on very small numbers of deaths.

When they analyzed 1980–85 injury mortality in children, Waller, Baker, and Szocka found that homicide rates for the population age 0 to 14 were the highest in Blacks (4.7 per 100,000), followed by Native Americans (2.7), and Asians and Pacific Islanders (1.9). Whites (1.3) had the lowest rate (Table 3). After fires, homicides represent the largest percentage difference between Black and White children's rates of injury deaths, considering the six leading causes (Table 4).

Child homicides increased in the 1970s. A published analysis of the difference in children's death rates between 1972–74 and 1982–84 found decreases in five out of six injury causes examined. (23) But, between 1985 and 1987, death rates for one- to four-year-olds increased 13.6 percent and, for five- to nine-year-olds, 42.9 percent. Black females in both age groups registered the largest increase—18.2 percent in the younger group and 46.7 percent in the older one. White and Black males age one to four experienced similar increases, 12.5 percent and 11.1 percent, respectively, while White females had a 7.1 percent increase. For ages five to nine, White males and females each experienced a 40.0 percent increase, and Black males, a rise of 31.6 percent. Improved reporting of child homicides may have contributed to the increases. Child homicide rates since 1984 have remained in a narrow range. (32, 5)

Homicide rates by ethnicity are not available on a national basis. However, death certificates from 18 states and the District of Columbia suggest that homicide is the fifth leading cause of death among Hispanics, whereas among the population at large it is in twelfth place. These 19 jurisdictions account for about 80 percent of the Hispanic population of the United States, but data from them may not be generalizable to the entire Hispanic population, particularly Cubans. (5) Nonetheless, the data suggest a very severe homicide problem among Hispanics. Homicides accounted for 4.6 percent of all 1987 deaths in the Hispanic population compared to 1 percent for the total U.S. population. (5) Comparisons of percentage distributions for causes of death among Hispanics and non-Hispanic Whites in the 19 jurisdictions show that, for deaths at ages 15 to 24 years—an age group with one of the highest risks of homicide—25.5 percent of Hispanic deaths were homicides, compared to 5.5 percent of non-Hispanic White deaths in this age group. For deaths at age 25 to 44, the respective percentages were 14.4 and 4.2. In both age groups, homicide was the second leading cause of death among Hispanics, but the fourth and sixth leading cause, respectively, among non-Hispanic Whites. Among Blacks, homicide deaths were 37 percent of all deaths at ages 15 to 24 in 1986. (6 33)

Some regional and state data have been collected regarding Hispanic Americans, and they also appear to indicate substantial

differentials for this group. Between 1977 and 1982 in five southwestern states (Arizona, California, Colorado, New Mexico, and Texas), the age-adjusted rate per 100,000 population per year for homicides excluding legal intervention was 22.2 for Hispanics, compared to 8.1 for non-Hispanic Whites, and 47.4 for non-Hispanic Blacks. (2) In the State of Massachusetts, the distribution of deaths by cause for the period 1981–85 indicates that, similar to Blacks residing in Massachusetts, homicides are the leading cause of injury deaths in the Hispanic population (38.5 percent of all injury deaths), and the proportion of deaths due to homicide is similar for Blacks and Hispanics (classified into mutually exclusive categories). (34) In New York State, homicide was the leading cause of death among Blacks and Hispanics age 1 to 19 years in 1986. It was second among the leading causes of death and the leading cause of injury death for ages 20 to 39 in these groups. The proportion of deaths due to homicide was similar for these ages in the two minority groups (mutually exclusive categories). (35)

Table 19 shows that for the population as a whole homicide is currently a more prominent cause of death than in previous years.

The total-population age-adjusted death rate due to homicide was about 5 per 100,000 between 1950 and 1960. In the 1960s this indicator began to climb, so that by 1970 it had increased by approximately three-quarters to 9.1 per 100,000. The overall rate has tended to stay at that general level. Against a background of declining all-cause years of potential life lost (YPLL)

before age 65, the homicide-only attributable YPLL increased by 44 percent between 1968 and 1985. (30) During that period, homicide-only has nearly doubled its proportion of total YPLL. One contributing factor, aside from the increased incidence, is that the average age at death due to homicide-only decreased during the 1970s, from 33 years of age to 31. (30)

Long-term trends in homicide differ for Whites and minorities. During the 1960s and early 1970s, an increase in the homicide fatality rate occurred among racial minorities, as well as among Whites. Between 1960 and 1970 the minorities' increase was 60.1 percent, compared to 74.1 percent for Whites (see Table 19). However, after 1972, the homicide rate for Blacks began to decline dramatically (2) and by 1980 the differentials were approximately half their 1950 size for males and females. The differentials have changed little in the 1980s. Narrowing of the gap in homicide rates since the 1950s is strongest, however, for Native Americans and Alaska Natives, a group whose differential with Whites declined by 71 percent from 1955 to 1985.

2. Suicide

Overall, suicide is a more frequent cause of death than homicide, (5) and it is more common among Whites than among minorities generally. Data since 1950 show that suicide rates for White Americans have remained relatively stable (11.6 in 1950 vs. 12.5 in 1987) (Table 20). Since 1970, suicide among Native Americans has decreased (from 17.9 per 100,000 in 1970 to 15.0 in 1986). For Black Americans,

however, rates increased from 1950 to 1970, and they continued increasing among Black males thereafter, to 12.0 per 100,000 by 1987. When compared to the population as a whole, Native Americans have had considerably higher relative risks of suicide during many of the past 35 years, but since the late 1970s the excess has stayed in the range of 20 percent to 30 percent. (19) The suicide death rate for Native American males in 1984–1986 was 23.0 per 100,000 (the corresponding rate for females is not published).

3. Rates of Criminal Victimization Involving Injuries

Violent crimes resulting in personal injury are much more common in the population than homicides, and can exact heavy costs in terms of physical and psychic suffering. Available data indicate that Blacks have higher rates of injurious incidents of criminal victimization than Whites, and Hispanics have higher rates than non-Hispanics. The data come from the U.S. Justice Department 1987 National Crime Survey (NCS), a household survey of approximately 46,000 housing units. Since criminal incidents often involve more than one crime, the data are categorized according to the most serious crime that took place. Thus, the descending order of seriousness in crimes involving injury is rape, robbery, and assault.

The 1987 NCS data are summarized in Table 21, which reports rates of completed and attempted crime with and without injury. Completed and attempted robberies with injury are further broken down into injuries from minor assault and those from serious

assault. An injury is classified as resulting from a serious assault if, regardless of the extent of injury, a weapon was used in the commission of the crime or, if not, the injury was either serious (e.g., broken bones, loss of teeth, internal injuries, or loss of consciousness) or resulted in two or more days of hospitalization.

Compared to Whites, Blacks are 45 percent more likely to be the victims of violent crime (39.6 vs. 27.3 per 1,000 population), and 46 percent more likely to be the victims of violent crime involving injuries (13.0 vs. 8.9 per 1,000). In only one category, completed simple assault with injury, were Blacks less likely than Whites to be victims. For all other crimes involving injury, Blacks were more likely than Whites to be victims (range of differentials: 52 percent to 400 percent). The rate of rape among Blacks is more than 3 times that among Whites. Injury in completed robbery among Blacks is 2.7 times that for Whites, and injury from aggravated assault is 1.7 times as great for Blacks as for Whites.

Data on ethnicity, also presented in Table 21, show a 40 percent higher victimization rate for Hispanics than non-Hispanics. The Hispanic excess for injurious victimizations was 36 percent. Hispanics were less likely than non-Hispanics to report completed aggravated assaults resulting in injury. But for completed simple assaults with injury and completed robberies with injury, Hispanics were approximately 60 percent more likely than non-Hispanics to report being victims. Other detailed

categories that show excess injuries for Hispanics were based on small numbers.

D. Injury-related Utilization of Health Services

Hospitalization rates for injuries, and average lengths of stay, are another source of data that reflect the relative extent of injuries among population groups. Table 22 presents discharge rates and average length of stay for these hospitalizations, and Table 23 shows comparisons of the White and minority statistics. Codes used to identify the hospital stays were the first-listed diagnosis, which indicates the medical nature of the injury, rather than the external cause of injury codes, which indicate environmental factors causing injury. (A given injury can carry both types of codes.) Patients discharged alive or dead are included in the data.

For all injury codes, minorities are 10 percent to 20 percent more likely to be hospitalized for injury (Table 23). Of the four subcategories listed, with the exception of fractures, minorities are consistently more likely than Whites to be hospitalized for injuries. Minorities are 2 to 2.5 times as likely to be hospitalized for lacerations and open wounds, compared with Whites. During 1982–1987, average lengths of stay (ALOS) for minorities hospitalized for injury more often than not equalled or exceeded ALOS for Whites (Table 22). With one or two exceptions, however, these differences did not exceed 10 percent to 20 percent for any injury in any year. This difference may partly reflect contrasting patterns of hospital use for minorities and Whites, as well as differences in injury severity. Comparisons of the minority and White discharge rates

and average length of stay show small or inconsistent changes over the 1982–1987 time period.

Ambulatory care visits for Whites and Blacks, counted in the National Ambulatory Medical Care Survey (NAMCS), also suggest a disproportionate injury

problem among the latter. The reader is reminded of the limitations of this data set, discussed in Chapter I. However, given those limitations, data for 1975–1981 and 1985 suggest that, with the exception of 1979 and 1981, injuries account for

a slightly higher proportion of visits to private doctors' offices for racial minorities than for Whites. For Whites, the proportion of visits for injuries has increased slightly since 1975 (7.1 percent of total visits in 1975, 8.3 percent in 1985). For minorities, the proportion

fluctuated from 8.4 percent in 1975 to 9.2 percent in 1979 and 8.5 percent in 1985. (36) NAMCS data for 1985 show that 8.3 percent of Hispanics' visits are for injuries. (37) However, additional surveys are needed to allow for comparisons with Hispanics.

Table 1

Unintentional injury deaths and injuries in 1988

Type of Accident ¹	All Disabling Injuries ²	Permanent Impair- ments	Temporary Total Disabilities	Deaths	Change in Deaths from 1987
Total	9,100,000	340,000	8,700,000	96,000	+2%
Motor Vehicle	1,800,000	150,000	1,700,000	49,000	+1%
Public nonwork	1,600,000			44,900	
Work	200,000			3,900	
Home	(³)			200	
Work	1,800,000	60,000	1,700,000	10,600	–5%
Nonmotor vehicle	1,600,000			6,700	
Motor vehicle	200,000			3,900	
Home	3,400,000	90,000	3,300,000	22,500	+5%
Nonmotor vehicle	3,400,000			22,300	
Motor vehicle	(³)			200	
Public	2,300,000	50,000	2,200,000	18,000	+3%

¹ Deaths and injuries above for the four separate classes (motor vehicle, work, home, and public) total more than national figures due to rounding and because some deaths and injuries are included in more than one class. For example, 3,900 work deaths involved motor vehicles and are in both the work and motor vehicle totals; and 200 motor vehicle deaths occurred on home premises and are in both home and motor vehicle. The total of such duplications amounted to about 4,100 deaths and 200,000 injuries in 1988.

² Disabling beyond the day of accident. Disabling injuries are further classified as permanent impairments or temporary total disabilities. Injuries are not reported on a national basis, so the totals shown are approximations based on ratios of disabling injuries to deaths developed from special studies. The totals are the best estimates for the current year; however, they should not be compared with totals shown in previous editions of Accident Facts to indicate year-to-year changes or trends.

³ Less than 10,000.

Source: Excerpted from National Safety Council (NSC), Accident Facts 1989 Edition, Chicago, IL, p. 2. NSC estimates (rounded) based on data from the National Center for Health Statistics, state industrial commissions, state traffic authorities, state departments of health, insurance companies, industrial establishments, and other sources.

Table 2Age-adjusted * death rates for unintentional injuries by race and sex: United States, selected years from 1950 to 1987 ¹

Race and sex	Year ²							
	1950	1955	1960	1970	1980	1985	1986	1987
Deaths per 100,000 population								
Total								
Both sexes	57.5	—	49.9	53.7	42.3	34.7	35.2	34.6
Males	83.7	—	73.9	80.7	64.0	51.8	52.5	51.2
Females	31.7	—	26.8	28.2	21.8	18.6	18.7	18.8
White								
Both sexes	55.6	—	47.6	51.0	41.5	34.1	34.5	33.9
Males	81.0	—	70.6	76.2	62.3	50.4	51.1	49.7
Females	30.6	—	25.4	27.2	21.4	18.4	18.4	18.6
All other races								
Both sexes	72.0	—	67.3	72.8	49.5	39.7	39.9	39.7
Males	107.1	—	101.1	115.7	78.4	62.1	62.3	61.9
Females	38.8	—	36.1	35.1	24.8	20.4	20.4	20.2
Black								
Males	105.7	—	100.0	119.5	82.0	66.7	66.9	66.8
Females	38.5	—	35.9	35.3	25.1	20.7	21.0	21.0
Native American/Alaska Native ³	—	184.0	186.1	181.8	107.3	77.7	83.2	³
Ratio to White								
All other races								
Both sexes	1.30	—	1.41	1.43	1.19	1.16	1.16	1.17
Males	1.32	—	1.43	1.52	1.26	1.23	1.22	1.25
Females	1.27	—	1.42	1.30	1.16	1.11	1.11	1.09
Black								
Males	1.31	—	1.42	1.57	1.32	1.32	1.31	1.34
Females	1.26	—	1.41	1.30	1.17	1.13	1.14	1.13
Native American/Alaska Native	—	—	3.91	3.57	2.59	2.28	2.41	—

—Not available.

* Age-adjusted rates standardized to the 1940 U.S. population.

¹ 1950, 1960, and 1970 data are based on the Sixth, Seventh, and Eighth Revisions of the International Classification of Diseases, respectively. 1980 and later data are based on the Ninth Revision.² Rates for 1950, 1955, and 1960 include deaths of nonresidents of the United States.³ Rates pertain to American Indians and Alaska Natives residing in Reservation States.

Source: Compiled from (1) Department of Health, Education and Welfare, "Mortality Trends for Leading Causes of Death, U.S. 1950-69," Rockville, MD, Series 20, No. 16, Table K, p. 30, (2) National Center for Health Statistics, Advance Report of Final Mortality Statistics, 1980, Monthly Vital Statistics Report, Vol. 32, No. 4, Supplement, Department of Health and Human Services Pub. No. (PHS) 83-1120, Hyattsville, MD, Aug 1983, (3) National Center for Health Statistics, Advance Report of Final Mortality Statistics, 1985, Department of Health and Human Services Pub. No. (PHS) 87-1120, Monthly Vital Statistics Report, Table 12, p. 37, (4) National Center for Health Statistics, Health, United States, 1987, Department of Health and Human Services Pub. No. (PHS) 88-1232, U.S. Government Printing Office, Mar 1988, Table 22, pp. 58-59, (5) Department of Health and Human Services, Indian Health Service, "Trends in Indian Health, 1989," Table 4.14, p. 42, (6) National Center for Health Statistics, Advance Report of Final Mortality Statistics, 1986, Department of Health and Human Services Pub. No. (PHS) 88-1120, Monthly Vital Statistics Report, Vol. 37, No. 6, Supplement, Sep 30, 1988, Table 12, p. 38, (7) National Center for Health Statistics, Advance Report of Final Mortality Statistics, 1987, Monthly Vital Statistics Report, Vol. 38, No. 5, Supplement, Sep 26, 1989, Department of Health and Human Services Pub. No. (PHS) 89-1120, Table 12, p. 29.

Table 3

Average annual injury death rates* by leading causes and race, ages 0-14: United States, 1980-1985

Injury Cause	White	Black	Native American	Oriental	All Races**
All injuries	17.5 (44,217)	29.3 (13,634)	33.9 (918)	17.5 (917)	19.3 (59,711)
Motor vehicle occupant	3.3 (8,224)	2.6 (1,217)	6.9 (186)	3.1 (162)	3.2 (9,796)
Pedestrian, traffic	2.2 (5,487)	3.8 (1,748)	3.6 (98)	2.9 (153)	2.4 (7,489)
Drowning	2.6 (6,438)	3.9 (1,814)	4.8 (131)	3.4 (180)	2.8 (8,568)
House fire	1.6 (4,080)	6.0 (2,795)	3.3 (90)	1.0 (51)	2.3 (7,021)
Fall	0.4 (933)	0.7 (333)	0.6 (17)	0.9 (49)	0.4 (1,332)
Homicide	1.3 (3,355)	4.7 (2,191)	2.7 (72)	1.9 (101)	1.9 (5,722)

* Rate/100,000/year (total deaths over six-year period in parentheses).

** All Races column includes cases where race was unknown.

Source: A.E. Waller, S.P. Baker, A. Szocka, "Childhood Injury Deaths: National Analysis and Geographic Variations," American Journal of Public Health, Mar 1989, Vol. 79, No. 3, Table 2, p. 312.

Table 4

Injury death ratios for children 0-14 years: United States, 1980-1985

Injury Cause	Ratio of Death Rate for This Group to Death Rate for Whites		
	Black	Native American	Asian Pacific Islander
All Injuries	1.67	1.94	1.00
Motor Vehicle Occupant	0.79	2.09	0.94
Pedestrian, traffic	1.73	1.64	1.32
Drowning	1.50	1.85	1.31
House Fire	3.75	2.06	0.63
Fall	1.75	1.50	2.25
Homicide	3.62	2.08	1.46

Source: Calculated from data in A.E. Waller, S.P. Baker, A. Szocka, "Childhood Injury Deaths: National Analysis and Geographic Variations," American Journal of Public Health, Mar 1989, Vol. 79, No. 3, Table 3, p. 312.

Table 5

Ranking of leading causes of years of potential life lost (YPLL) before age 65 and percentage of change in rates: United States, 1979 and 1986

Cause of Mortality	Ranking		YPLL Rate Change 1979-1986 (%)
	1979	1986	
All Causes	—	—	(-13.3)
Unintentional Injuries	1	1	(-21.3)
Malignant Neoplasms	2	2	(-6.7)
Diseases of the Heart	3	3	(-16.1)
Suicide/Homicide	4	4	(-5.7)
Congenital Anomalies	6	5	(-17.1)
Prematurity	5	6	(-45.5)
Sudden Infant Death Syndrome	7	7	(-17.2)
Acquired Immunodeficiency Syndrome	—*	8	—**
Cerebrovascular Disease	8	9	(-25.9)
Chronic Liver Diseases and Cirrhosis	9	10	(-28.1)
Pneumonia and Influenza	10	11	(-21.6)
Chronic Obstructive Pulmonary Diseases	12	12	(+8.3)
Diabetes Mellitus	11	13	(+6.2)

* Unranked. ** Not calculable. —Not available.

Source: Centers for Disease Control, "Changes in Premature Mortality—United States, 1979-1986," Morbidity and Mortality Weekly Report, Jan 29, 1988, Vol. 37, No. 3, p. 47.

Table 6

Death rates* for all unintentional injuries, by race, sex, and age: United States, 1986

	White			All other			Black		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Total	39.3	55.0	24.4	40.7	61.0	22.1	42.9	65.0	23.0
Under 1 yr.	19.7	20.7	18.7	42.8	46.3	39.3	46.8	50.5	43.1
1-4 yrs.	18.8	22.0	15.5	27.0	31.1	22.8	29.1	32.4	25.6
5-9 yrs.	10.1	13.2	6.8	17.4	21.5	13.2	18.5	22.5	14.5
10-14 yrs.	13.2	18.4	7.8	14.8	21.6	7.8	15.1	22.3	7.8
15-19 yrs.	52.6	76.0	28.2	29.1	45.3	12.5	27.9	44.1	11.5
20-24 yrs.	55.9	88.7	22.7	43.5	71.9	16.3	41.6	70.2	15.0
25-29 yrs.	42.1	67.1	16.5	44.7	73.9	18.0	45.9	77.3	17.6
30-34 yrs.	35.0	55.6	14.1	43.8	70.9	19.7	48.2	79.5	20.8
35-39 yrs.	30.0	46.7	13.4	43.8	75.7	16.6	48.4	86.5	16.3
40-44 yrs.	28.2	43.1	13.5	41.8	68.3	19.4	46.6	78.1	20.6
45-49 yrs.	27.8	42.0	14.0	42.4	72.8	16.8	46.5	81.7	17.8
50-54 yrs.	30.0	45.4	15.2	43.0	70.5	20.5	46.1	77.6	20.6
55-59 yrs.	30.1	44.2	17.1	50.4	83.8	22.9	54.4	91.9	23.2
60-64 yrs.	35.0	50.8	21.1	53.7	77.0	34.8	59.0	84.6	38.3
65-69 yrs.	40.0	53.8	28.5	53.6	84.2	29.8	57.5	91.1	31.7
70-74 yrs.	56.8	77.0	41.8	74.6	103.1	54.1	80.3	112.5	57.9
75-79 yrs.	84.6	116.1	64.5	104.4	161.9	66.4	109.1	177.8	65.3
80-84 yrs.	137.6	186.4	111.9	154.5	227.4	111.0	161.5	236.0	119.6
85 yrs. & over	254.6	358.1	214.6	227.3	322.5	181.2	226.1	320.9	180.7
Number of deaths	80,315	54,864	25,451	14,962	10,706	4,256	12,585	9,035	3,550

* Rates per 100,000 population.

Source: For rates, Vital Statistics of the United States, 1986, Mortality, Part A, Table 1-8, pp. 32-33, Hyattsville, MD. For numbers of deaths, National Center for Health Statistics, Advance Report of Final Mortality Statistics, 1986, Monthly Vital Statistics Report, Vol. 37, No. 6, Supplement, Sep 30, 1988, Department of Health and Human Services Pub. No. (PHS) 88-1120, Hyattsville, MD, Table 10, p. 32.

Rate Ratios (relative to White rate)					
All other			Black		
Total	Male	Female	Total	Male	Female
1.04	1.11	0.91	1.09	1.18	0.94
2.17	2.24	2.10	2.38	2.44	2.30
1.44	1.41	1.47	1.55	1.47	1.65
1.72	1.63	1.94	1.83	1.70	2.13
1.12	1.17	1.00	1.14	1.21	1.00
0.55	0.60	0.44	0.53	0.58	0.41
0.78	0.81	0.72	0.74	0.79	0.66
1.06	1.10	1.09	1.09	1.15	1.07
1.25	1.28	1.40	1.38	1.43	1.48
1.46	1.62	1.24	1.61	1.85	1.22
1.48	1.58	1.44	1.65	1.81	1.53
1.53	1.73	1.20	1.67	1.95	1.27
1.43	1.55	1.35	1.54	1.71	1.36
1.67	1.90	1.34	1.81	2.08	1.36
1.53	1.52	1.65	1.69	1.67	1.82
1.34	1.57	1.05	1.44	1.69	1.11
1.31	1.34	1.29	1.41	1.46	1.39
1.23	1.39	1.03	1.29	1.53	1.01
1.12	1.22	0.99	1.17	1.27	1.07
0.89	0.90	0.84	0.89	0.90	0.84

Table 7

Motor vehicle-related deaths and death rates, by race and rate ratios: United States 1978-1987

Year	White		Black		Other		Total		Ratio to White	
	Deaths	Crude Rate	Deaths	Crude Rate	Deaths	Crude Rate	Deaths	Crude Rate	Black (relative to White)	Other (relative to White)
1978	45,978	24.0	5,254	20.3	1,184	27.9	52,416	23.6	0.85	1.16
1979	47,248	24.4	5,132	19.5	1,144	25.3	53,524	23.8	0.80	1.04
1980	46,863	24.0	5,081	19.0	1,228	23.6	53,172	23.5	0.79	.98
1981	45,424	23.1	4,809	17.7	1,152	20.4	51,385	22.4	0.77	.88
1982	40,191	20.3	4,493	16.3	1,095	18.1	45,779	19.7	0.80	.89
1983	38,864	19.4	4,472	15.9	1,116	17.5	44,452	19.0	0.82	.90
1984	40,429	20.1	4,721	16.6	1,113	16.5	46,263	19.6	0.83	.82
1985	39,689	19.6	4,916	17.0	1,296	18.3	45,901	19.2	0.86	.93
1986	41,189	20.2	5,287	18.0	1,389	18.6	47,865	19.9	0.89	.92
1987	41,581	20.2	5,287	17.8	1,422	18.1	48,290	19.8	0.88	.90

Source: Compiled from (1) National Center for Health Statistics, Advance Report of Final Mortality Statistics, 1985, Monthly Vital Statistics Report, Vol. 36, No. 5 Supplement, Aug 28, 1987. Department of Health and Human Services Pub. No. 87-1120, Hyattsville, MD, Table 11, p. 34, (2) National Center for Health Statistics, Advance Report of Final Mortality Statistics, 1986, Monthly Vital Statistics Report, Vol. 37, No. 6, Supplement, Sep 30, 1988. Department of Health and Human Services Pub. No. (PHS) 88-1120, Hyattsville, MD, Table 11, p. 35, (3) National Center for Health Statistics, Advance Report of Final Mortality Statistics, 1987, Monthly Vital Statistics Report, Vol. 38, No. 5, Supplement, Sep 26, 1989. Department of Health and Human Services Pub. No. (PHS) 89-1150, Hyattsville, MD, Tables 10 and 11, pp. 25 and 27, (4) Centers for Disease Control, Morbidity and Mortality Weekly Report, Vol. 37, No. SS-1, Feb 1988, Table 2, p. 9, and (5) U.S. Bureau of the Census United States Population Estimates by Age, Sex, and Race 1980 to 1987. Current Population Reports, Series P-25, No. 1022, Washington, U.S. Department of Commerce, Table 2, pp. 22-24.

Table 8

Death rates for motor vehicle accidents according to sex, race, and age: United States, 1986

	Rates per 100,000 Population						Ratio to White			
	White		All Other		Black		All Other		Black	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Total ¹	29.2	11.5	28.1	9.1	28.6	8.5	0.96	0.79	.98	.74
Under 1 yr. ²	4.1	4.6	8.3	5.6	8.0	5.3	2.02	1.22	1.95	1.15
1-4 yrs.	7.0	6.0	11.0	6.7	10.7	6.9	1.57	1.11	1.53	1.15
5-9 yrs.	7.1	4.0	10.6	6.5	10.8	6.4	1.49	1.63	1.52	1.60
10-14 yrs.	10.4	5.7	8.5	3.5	8.4	3.1	0.82	0.61	.81	.54
15-19 yrs.	58.4	24.8	27.4	8.9	25.6	8.0	0.47	0.36	.44	.32
20-24 yrs.	66.4	18.6	47.0	11.6	45.4	10.2	0.71	0.62	.68	.55
25-29 yrs.	43.0	12.0	42.2	11.3	43.0	10.7	0.98	0.94	1.00	.89
30-34 yrs.	31.3	9.4	37.1	10.0	40.2	9.9	1.20	1.06	1.28	1.05
35-39 yrs.	24.8	8.6	34.5	9.7	37.9	8.6	1.39	1.13	1.53	1.00
40-44 yrs.	22.3	8.3	29.0	9.2	31.1	8.9	1.30	1.10	1.39	1.07
45-49 yrs.	21.0	8.2	29.0	8.2	31.1	7.6	1.38	1.00	1.48	.93
50-54 yrs.	20.5	8.9	31.2	10.4	31.7	9.8	1.52	1.17	1.55	1.10
55-59 yrs.	19.7	9.4	31.2	10.4	33.9	8.9	1.58	1.11	1.72	.95
60-64 yrs.	20.2	9.8	27.6	12.7	29.5	13.1	1.37	1.30	1.46	1.34
65-69 yrs.	19.7	12.4	24.5	8.8	24.3	9.2	1.24	0.71	1.23	.74
70-74 yrs.	25.9	16.8	30.4	11.1	31.2	10.3	1.17	0.66	1.20	.61
75-79 yrs.	37.7	19.6	50.5	13.8	52.8	10.5	1.34	0.70	1.40	.54
80-84 yrs.	52.6	21.9	55.7	12.2	53.5	9.2	1.06	0.56	1.02	.42
85 yrs. & over	51.6	14.7	63.8	10.9	62.7	11.0	1.24	0.74	1.22	.75

¹ Figures for age not stated included in "Total" but not distributed among age groups.² Death rates under 1 year (based on population counts or estimates) differ from infant mortality rates (based on live births).

Source: For rates, National Center for Health Statistics. Vital Statistics of the United States, 1986, Mortality, Part A, Table 1-8, pp. 32-33.

Table 9

Number and rate* of deaths from motor vehicle and other unintentional injuries, by age and sex, American Indians and Alaska Natives in Reservations States, 1984–1986 and U.S. all races, 1985

	Male				Female			
	Indian & Alaska Native		U.S. All Races	Ratio Indian to U.S. All Races	Indian & Alaska Native		U.S. All Races	Ratio Indian to U.S. All Races
	Number	Rate			Number	Rate		
Motor Vehicle Accidents								
Under 1 year	14	26.6	5.0	5.3	7	13.6	4.6	3.0
1 to 4 years	56	30.3	8.2	3.7	7	19.5	6.0	3.3
5 to 14 years	50	10.5	8.5	1.2	43	9.2	5.1	1.8
15 to 24 years	432	87.9	53.5	1.6	157	32.2	18.4	1.8
25 to 34 years	342	99.8	35.6	2.8	122	34.1	10.0	3.4
35 to 44 years	173	77.3	25.1	3.1	81	34.2	9.4	3.6
45 to 54 years	119	74.9	21.8	3.4	43	25.0	8.9	2.8
55 to 64 years	63	55.8	21.8	2.6	29	23.1	9.9	2.3
65 to 74 years	35	52.6	22.6	2.3	8	9.9	13.9	0.7
75 to 84 years	21	76.2	41.4	1.8	14	39.2	19.4	1.7
85 years and over	5	70.0	54.5	1.3	0	0.0	14.7	—
Other Accidents								
Under 1 year	26	49.3	20.1	2.5	20	38.9	17.7	2.2
1 to 4 years	70	37.8	15.8	2.4	20	16.7	9.8	1.7
5 to 14 years	61	12.8	8.1	1.6	24	5.1	3.2	1.6
15 to 24 years	249	50.7	20.6	2.5	59	12.1	3.9	3.1
25 to 34 years	204	59.5	25.2	2.4	58	16.2	4.9	3.3
35 to 44 years	173	77.3	24.0	3.2	43	18.1	5.2	3.5
45 to 54 years	112	70.5	25.6	2.8	32	18.6	7.2	2.6
55 to 64 years	81	71.7	32.7	2.2	30	23.9	10.9	2.2
65 to 74 years	60	90.2	45.4	2.0	29	35.8	22.8	1.6
75 to 84 years	42	152.4	107.9	1.4	25	70.0	63.5	1.1
85 years and over	29	406.3	304.3	1.3	27	250.1	197.9	1.3

* Per 100,000 population.

Source: Department of Health and Human Services, Indian Health Service, "Trends in Indian Health, 1989," Table 4.15, p. 44.

Table 10

Unintentional injury deaths from motor vehicle crashes and all other causes, and percentage distribution, by race: United States, 1986 and 1987

		All races	All other races		
			White	Total	Black
All accidents	1986	95,277 (100.0)	80,315 (100.0)	14,962 (100.0)	12,585 (100.0)
	1987	95,020 (100.0)	79,810 (100.0)	15,210 (100.0)	12,777 (100.0)
Motor vehicle	1986	47,865 (50.2)	41,189 (51.3)	6,676 (44.6)	5,287 (42.0)
	1987	48,290 (50.8)	41,581 (52.1)	6,709 (44.1)	5,287 (41.4)
All other (i.e., non-motor vehicle)	1986	47,412 (49.8)	39,126 (48.7)	8,286 (55.4)	7,298 (58.0)
	1987	46,730 (49.2)	38,229 (47.9)	8,501 (55.9)	7,490 (58.6)

Source: For numbers of deaths (1) National Center for Health Statistics, Advance Report of Final Mortality Statistics, 1986, Monthly Vital Statistics Report, Vol. 37, No. 6, Supplement, Sep 30, 1988, Department of Health and Human Services Pub. No. (PHS) 88-1120, Table 10, p. 32, (2) National Center for Health Statistics, Advance Report of Final Mortality Statistics, 1987, Monthly Vital Statistics Report, Vol. 38, No. 5, Supplement, Sep 26, 1989, Department of Health and Human Services Pub. No. (PHS) 89-1120, Table 10, p. 25.

Table 11

Age-adjusted death rates for unintentional injuries except motor-vehicle injuries by race and sex: United States, selected years from 1950 to 1987 ¹

Race and sex	Year ²							
	1950	1955	1960	1970	1980	1985	1986	1987
Deaths per 100,000 population								
Total								
Both sexes	34.2	29.7	27.4	26.3	19.4	16.0	15.7	15.2
Males	47.3	42.3	39.4	39.6	29.7	24.4	23.9	23.1
Females	21.0	17.4	15.8	13.8	10.0	8.2	8.1	7.8
White								
Both sexes	32.5	27.9	25.3	24.1	18.1	15.0	14.7	14.0
Males	45.0	40.0	36.5	36.1	27.5	22.9	22.4	21.3
Females	20.0	16.2	14.4	12.8	9.1	7.5	7.4	7.2
All other races								
Both sexes	46.3	43.0	42.9	41.9	29.2	22.3	21.7	21.7
Males	65.9	61.5	61.6	66.0	45.5	34.9	33.9	34.2
Females	27.7	25.8	25.5	20.8	15.4	11.6	11.3	11.0
Black								
Males	65.9	—	61.8	69.4	49.1	39.0	37.7	38.4
Females	28.2	—	25.9	21.5	16.7	12.5	12.6	12.3
Native American/Alaska Native								
Both sexes	—	90.3	94.6	83.3	46.0	35.1	35.5	—
Ratio to White								
All other races								
Both sexes	1.42	1.54	1.69	1.73	1.61	1.48	1.47	1.55
Males	1.46	1.54	1.68	1.82	1.65	1.52	1.51	1.61
Females	1.38	1.59	1.77	1.62	1.69	1.54	1.52	1.53
Black								
Males	1.46	—	1.69	1.92	1.78	1.70	1.68	1.80
Females	1.41	—	1.79	1.67	1.83	1.66	1.70	1.71
Native American/Alaska Native								
Both sexes	—	3.24	3.73	3.45	2.54	2.34	2.41	—

—Not available.

* Age-adjusted rates standardized to the 1940 U.S. population.

¹ 1950, 1960, and 1970 data are based on the Sixth, Seventh, and Eighth Revisions of the International Classification of Diseases, respectively. Data from 1980 and later are based on the Ninth Revision.

² Rates for 1950, 1955, and 1960 include deaths of nonresidents of the United States.

³ Rates pertain to American Indians and Alaska Natives residing in Reservation States.

Notes: Many of the figures in this table were derived by subtraction from tables giving total unintentional mortality rates and the subtotal for motor vehicle fatalities. Small differences between some figures here and figures published elsewhere have resulted.

Source: Compiled from (1) Department of Health, Education and Welfare, "Mortality Trends for Leading Causes of Death, U.S. 1950-69." Rockville, MD, Series 20, No. 16, Table K, p. 30, (2) National Center for Health Statistics, Advance Report of Final Morality Statistics, 1980, Monthly Vital Statistics Report, Vol. 32, No. 4 Supplement, Department of Health and Human Services Pub. No. (PHS) 83-1120, Hyattsville, MD, Aug 1983, (3) National Center for Health Statistics "Health, United States, 1987," Department of Health and Human Services Pub. No. (PHS) 88-1232. U.S. Government Printing Office, Mar 1988, (4) Indian Health Service, "Trends in Indian Health, 1989," Table 4.14, p. 42, (5) National Center for Health Statistics, Monthly Vital Statistics Report, Vol. 37, No. 6 Supplement, Sep 30, 1988, Table 12, p. 18, (6) National Center for Health Statistics, Monthly Vital Statistics Report, Vol. 36, No. 5, Supplement, Aug 28, 1987, p. 37, and (7) National Center for Health Statistics, Advance Report of Final Mortality Statistics, 1987, Monthly Vital Statistics Report, Vol. 38, No. 5, Supplement Sep 26, 1989, Department of Health and Human Services Pub. No. (PHS) 89-1120, Table 12, p. 29.

Table 12

Death rates* for unintentional injuries except motor-vehicle injuries, according to sex, race, and age: United States, 1986

	White		All other				Ratio to White			
	Male	Female	Total		Black		Total All Other		Black	
			Male	Female	Male	Female	Male	Female	Male	Female
Total ¹	25.7	12.8	32.9	13.0	36.4	14.5	1.28	1.02	1.42	1.13
Under 1 yr. ²	16.6	14.1	38.0	33.6	42.6	37.8	2.29	2.38	2.57	2.68
1-4 yrs.	15.0	9.5	20.1	16.1	21.7	18.7	1.34	1.69	1.45	1.97
5-9 yrs.	6.0	2.8	10.9	6.7	11.7	8.0	1.82	2.39	1.95	2.86
10-14 yrs.	7.9	2.1	13.1	4.3	13.9	4.6	1.66	2.05	1.76	2.19
15-19 yrs.	17.6	3.4	18.0	3.6	18.6	3.5	1.02	1.06	1.06	1.03
20-24 yrs.	22.3	4.1	24.9	4.6	24.7	4.7	1.12	1.12	1.11	1.15
25-29 yrs.	24.2	4.4	31.7	6.7	34.3	6.9	1.31	1.52	1.42	1.57
30-34 yrs.	24.2	4.6	33.8	9.7	39.3	10.8	1.40	2.11	1.62	2.35
35-39 yrs.	21.9	4.8	41.1	7.0	48.5	7.7	1.88	1.46	2.21	1.60
40-44 yrs.	20.8	5.2	39.3	10.2	47.0	11.7	1.89	1.96	2.26	2.25
45-49 yrs.	21.0	5.8	43.8	8.6	50.6	10.2	2.09	1.48	2.41	1.76
50-54 yrs.	24.9	6.3	39.4	10.1	45.8	10.8	1.58	1.60	1.84	1.71
55-59 yrs.	24.5	7.7	52.6	12.5	57.9	14.2	2.15	1.62	2.36	1.84
60-64 yrs.	30.7	11.2	49.5	22.0	55.0	25.2	1.61	1.96	1.79	2.25
65-69 yrs.	34.1	16.1	59.7	20.9	66.8	22.5	1.75	1.30	1.96	1.40
70-74 yrs.	51.1	25.0	72.7	43.0	81.4	47.6	1.42	1.72	1.59	1.90
75-79 yrs.	78.4	44.9	111.5	52.6	125.0	54.9	1.42	1.17	1.59	1.22
80-84 yrs.	133.8	90.0	171.7	98.9	182.6	110.5	1.28	1.10	1.36	1.23
85 yrs. & over	306.5	199.9	258.8	170.3	258.2	169.7	0.84	0.85	0.84	0.85

* Rates per 100,000 population.

¹ Figures for age not stated included in "Total" but not distributed among age groups.² Death rates under 1 year (based on population counts or estimates) differ from infant mortality rates (based on live births).

Source: For rates, Vital Statistics of United States, 1986, Mortality, Part A, pp. 32-33, Hyattsville, MD. For number of deaths, National Center for Health Statistics, Advance Report of Final Mortality Statistics, 1986. Monthly Vital Statistics Report, Vol. 37, No. 6, Supplement, Sep 30, 1988, Department of Health and Human Services Pub. No. (PHS) 88-1120, Table 10, p. 32.

Table 13

Death rates* for burns and scalds,** by race, sex, and age: United States, 1986

	White		Black		Other		Ratio to White			
	Male	Female	Male	Female	Male	Female	Black		Other	
							Male	Female	Male	Female
Total	3.16	1.39	7.59	4.31	2.10	0.97	2.40	3.10	0.66	0.70
Total, age-adjusted***	3.17	1.28	8.64	4.35	2.30	0.95	2.73	3.40	0.73	0.74
0-4 years	3.89	2.97	12.17	12.60	2.72	1.92	3.13	4.24	0.70	0.65
5-9 years	1.67	1.07	4.43	4.62	1.84	0.32	2.65	4.32	1.10	0.30
10-14 years	1.14	0.63	2.05	1.80	1.85	0.65	1.80	2.86	1.62	1.03
15-19 years	1.97	0.75	1.78	1.45	1.85	0.68	0.90	1.93	0.94	0.91
20-24 years	3.14	0.77	3.53	1.44	2.35	0.95	1.12	1.87	0.75	1.23
25-29 years	3.32	0.82	6.64	1.70	1.98	1.10	2.00	2.07	0.60	1.34
30-34 years	3.21	0.79	5.76	2.71	1.40	0.27	1.79	3.43	0.44	0.34
35-39 years	2.70	0.81	8.49	2.26	1.01	0.91	3.14	2.79	0.37	1.12
40-44 years	2.82	0.72	7.40	2.50	1.34	0.52	2.62	3.47	0.48	0.72
45-49 years	2.87	0.88	9.91	1.98	2.21	0.00	3.45	2.25	0.77	0.00
50-54 years	3.30	0.83	8.70	3.29	2.14	1.23	2.64	3.96	0.65	1.48
55-59 years	2.97	1.24	13.89	2.81	4.42	1.37	4.68	2.27	1.49	1.10
60-64 years	3.65	1.33	12.53	6.36	4.00	0.80	3.43	4.78	1.10	0.60
65-69 years	3.59	1.66	12.97	5.61	2.53	1.03	3.61	3.38	0.71	0.62
70-74 years	5.16	2.91	18.70	8.22	3.39	2.78	3.62	2.82	0.66	0.96
75-79 years	6.62	3.67	28.00	11.91	2.38	2.00	4.23	3.25	0.36	0.54
80-84 years	10.80	5.80	39.53	21.57	0.00	0.00	3.66	3.72	0.00	0.00
85 years & over	15.31	5.72	47.76	36.99	14.29	4.76	3.12	6.47	0.93	0.83
Number of deaths	3,157	1,452	1,054	665	77	37	—	—	—	—

* Rates per 100,000 population.

** Includes burn and scald deaths resulting from unintentional and intentional injuries.

*** Age-adjusted to the 1980 Census U.S. population (all races, both sexes).

Source: For rates and number of deaths, National Center for Health Statistics, vital statistics compiled by Centers for Disease Control, Center for Environmental Health and Injury Control, Division of Injury Epidemiology and Control, Atlanta, GA.

Table 14

Number and rate* of deaths from residential fires, by sex and race, United States: 1978-1984

	1978		1979		1980		1981		1982		1983		1984	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
<i>Sex</i>														
Male	3,230	3.0	3,197	2.9	3,003	2.7	2,959	2.7	2,726	2.4	2,684	2.4	2,712	2.4
Female	2,171	1.9	2,102	1.8	2,080	1.8	1,997	1.7	1,836	1.5	1,828	1.5	1,754	1.4
<i>Race</i>														
White	3,785	2.0	3,645	1.9	3,550	1.8	3,382	1.7	3,155	1.6	3,028	1.5	2,997	1.5
Black	1,530	5.9	1,568	6.0	1,461	5.5	1,514	5.6	1,333	4.8	1,399	5.0	1,368	4.8
Other	86	2.0	86	1.9	72	1.4	60	1.1	74	1.2	85	1.3	101	1.5
Rate Ratios (Relative to White)														
Black to White		2.95		3.16		3.06		3.29		3.00		3.33		3.20
Other to White		1.00		1.00		0.78		0.65		0.75		0.87		1.00

* Rate per 100,000 population.

Source: Centers for Disease Control, J.A. Gulaid, R.W. Sattin, and R.J. Waxweiler, "Deaths from Residential Fires, 1978-1984." Morbidity and Mortality Weekly Report, Feb 1988, Vol. 37, No. SS 1, Table 1, p. 40.

Table 15

Drowning rates* by race, sex, and age: United States, 1986

Age	White		Black		Other		Ratio to White			
	Male	Female	Male	Female	Male	Female	Black		Other	
							Male	Female	Male	Female
Total	3.55	0.75	6.90	1.15	5.52	0.97	1.94	1.53	1.55	1.29
Total age-adjusted**	3.55	0.74	6.68	1.10	5.45	1.04	1.88	1.49	1.54	1.41
0-4 yrs.	5.54	3.11	3.26	2.61	6.54	3.01	0.59	0.84	1.18	0.97
5-9 yrs.	2.20	0.75	5.17	2.65	3.68	0.00	2.35	3.53	1.67	0.00
10-14 yrs.	2.13	0.46	8.30	1.72	3.70	1.30	3.90	3.74	1.74	2.83
15-19 yrs.	5.56	0.50	10.99	0.87	7.41	0.34	1.98	1.74	1.33	0.68
20-24 yrs.	5.55	0.55	8.98	0.48	9.68	0.00	1.62	0.87	1.74	0.00
25-29 yrs.	4.40	0.55	8.91	0.82	7.93	1.37	2.02	1.49	1.80	2.49
30-34 yrs.	3.28	0.37	7.91	0.90	5.31	0.53	2.41	2.43	1.62	1.43
35-39 yrs.	3.06	0.47	6.55	0.36	5.07	0.00	2.14	0.77	1.66	0.00
40-44 yrs.	2.46	0.35	6.80	0.75	2.68	0.00	2.76	2.14	1.09	0.00
45-49 yrs.	2.63	0.54	5.39	0.57	3.31	1.05	2.05	1.06	1.26	1.94
50-54 yrs.	2.56	0.37	5.80	1.10	4.29	2.47	2.27	2.97	1.68	6.68
55-59 yrs.	2.09	0.33	4.37	0.17	5.31	0.00	2.09	0.52	2.54	0.00
60-64 yrs.	2.55	0.77	4.47	1.09	1.00	0.80	1.75	1.42	0.39	1.04
65-69 yrs.	2.19	0.57	4.05	0.21	2.53	1.03	1.85	0.37	1.16	1.81
70-74 yrs.	3.09	0.76	3.44	0.80	5.08	2.78	1.11	1.05	1.64	3.66
75-79 yrs.	3.43	1.00	4.00	1.08	4.76	0.00	1.17	1.08	1.39	0.00
80-84 yrs.	3.51	2.00	4.65	1.31	5.00	0.00	1.32	0.65	1.42	0.00
85 yrs. & over	4.78	1.14	0.00	3.42	14.29	19.05	0.00	3.00	2.99	16.71
Number of deaths	3,543	782	959	177	202	37	—	—	—	—

* Rates per 100,000 population.

**Age-adjusted to the 1980 Census U.S. population (all races, both sexes).

Source: For rates and number of deaths, National Center for Health Statistics, vital statistics compiled by Centers for Disease Control, Center for Environmental Health and Injury Control, Division of Injury Epidemiology and Control, Atlanta, GA.

Table 16

Drownings and drowning rates* by sex and race; United States, 1978-1984

	1978		1979		1980		1981		1982		1983		1984		1985		1986	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
<i>Sex</i>																		
Male	5,875	5.4	5,779	5.3	6,121	5.5	5,335	4.8	5,294	4.7	5,342	4.7	4,420	3.9	4,411	3.8	4,704	4.0
Female	1,151	1.0	1,093	0.9	1,136	1.0	942	0.8	1,057	0.9	1,011	0.8	968	0.8	905	0.7	996	0.8
<i>Race</i>																		
White	5,407	2.8	5,302	2.7	5,623	2.9	4,836	2.5	4,884	2.5	4,975	2.5	4,137	2.1	4,083	2.0	4,325	2.1
Black	1,415	5.5	1,370	5.2	1,429	5.3	1,254	4.6	1,254	4.5	1,171	4.2	1,048	3.7	1,029	3.6	1,136	3.9
Other	204	4.8	200	4.4	205	3.9	187	3.3	213	3.5	207	3.2	203	3.0	204	2.9	239	3.2
	Ratio to White																	
Black to White		1.96		1.93		1.82		1.84		1.80		1.68		1.76		1.80		1.86
Other to White		1.71		1.63		1.34		1.32		1.40		1.28		1.43		1.45		1.52

* Rate per 100,000 population.

Source: Compiled from (1) Centers for Disease Control, J.A. Gulaid and R.W. Sattin, "Drownings in the United States, 1978-84." Morbidity and Mortality Weekly Report, Feb 1988, Vol. 37, No. SS-1, Table 1, p. 28, (2) Number of drownings for 1985 and 1986 from National Center for Health Statistics, vital statistics compiled by Centers for Disease Control, Center for Environmental Health and Injury Control, Division of Injury Epidemiology and Control, Atlanta, GA, (3) Denominators for 1985 and 1986 rates from U.S. Bureau of the Census. United States population estimates by age, sex, and race: 1980 to 1987. Current Population Reports, Series P-25, No. 1022, Washington, U.S. Department of Commerce, Table 2, pp. 23-24.

Table 17

Death rates for homicides (including legal intervention) by age: United States, 1987

Age	Rates per 100,000 population
Death Rates	
Total	8.7
Total, age-adjusted	8.6
Under 1 year	7.2
1-4 years	2.3
5-14 years	1.2
15-24 years	14.0
25-34 years	15.1
35-44 years	10.8
45-54 years	7.7
55-64 years	5.5
65-74 years	4.3
75-84 years	4.8
85 years & over	5.1

Source: National Center for Health Statistics, Advance Report of Final Mortality Statistics, 1987, Monthly Vital Statistics Report, Vol. 38, No. 5, Supplement, Sep 26, 1989, Department of Health and Human Services Pub. No. (PHS) 89-1120, Table 5, p. 17 and Table 8, p. 21.

Table 18

Death rates* for homicides (excluding legal intervention) by race, sex, and age, United States, 1986

Age in years	White		Black		Other		Ratio to White			
	Male	Female	Male	Female	Male	Female	Black		Other	
							Male	Female	Male	Female
Total	8.43	2.98	54.25	12.06	10.57	3.99	6.44	4.05	1.25	1.34
Total, age-adjusted**	8.13	2.93	54.48	11.79	10.53	3.76	6.70	4.02	1.30	1.28
0-4	2.64	2.17	12.10	8.95	2.45	2.74	4.58	4.12	0.93	1.26
5-9	0.53	0.44	1.92	2.58	1.23	0.63	3.62	5.86	2.32	1.43
10-14	1.23	1.09	4.57	2.04	0.93	0.32	3.72	1.87	0.76	0.29
15-19	8.49	3.34	50.68	12.15	12.04	4.39	5.97	3.64	1.42	1.31
20-24	15.60	5.15	106.65	20.07	23.75	8.20	6.85	3.90	1.52	1.59
25-29	14.87	4.85	112.68	24.08	16.15	6.59	7.58	4.96	1.09	1.36
30-34	13.79	3.85	99.05	19.43	15.08	6.10	7.18	5.05	1.09	1.58
35-39	11.45	3.47	87.54	15.93	14.19	4.83	7.65	4.59	1.24	1.39
40-44	11.20	3.46	65.86	13.23	11.61	3.35	5.88	3.82	1.04	0.97
45-49	9.31	2.97	58.96	8.20	13.81	3.16	6.33	2.76	1.48	1.06
50-54	7.56	2.53	51.64	8.92	12.14	3.70	6.83	3.53	1.61	1.46
55-59	6.98	1.78	39.29	6.79	8.85	3.42	5.63	3.81	1.27	1.92
60-64	4.77	2.08	29.98	6.55	6.00	2.40	6.29	3.15	1.26	1.15
65-69	4.30	2.08	32.16	8.32	5.06	1.03	7.48	4.00	1.18	0.50
70-74	4.14	2.36	25.95	9.02	3.39	0.00	6.27	3.82	0.82	0.00
75-79	4.29	2.71	25.71	7.58	9.52	4.00	5.99	2.80	2.22	1.48
80-84	4.99	3.65	31.40	10.46	10.00	0.00	6.29	2.87	2.00	0.00
85+	4.35	3.27	25.37	13.01	14.29	4.76	5.83	3.98	3.29	1.46
Number of deaths	8,409	3,119	7,536	1,859	387	152	—	—	—	—

* Rates per 100,000 population.

** Age-adjusted to the 1980 Census U.S. population (all races, both sexes).

Source: For rates and number of deaths, National Center for Health Statistics, vital statistics compiled by Centers for Disease Control, Center for Environmental Health and Injury Control, Division of Injury Epidemiology and Control, Atlanta, GA.

Table 19

Age-adjusted* death rates for homicides (including legal intervention) by race and sex: United States, selected years from 1950 to 1987¹

Race and Sex	Year ²							
	1950	1955	1960	1970	1980	1985	1986	1987
(Deaths per 100,000 population)								
Total								
Both sexes	5.4	4.8	5.2	9.1	10.8	8.3	9.0	8.6
Males	8.4	7.5	7.9	14.9	17.4	12.8	13.9	13.2
Females	2.5	2.3	2.6	3.7	4.5	3.9	4.1	4.1
White								
Both sexes	2.6	2.4	2.7	4.7	6.9	5.4	5.6	5.3
Males	3.9	3.5	3.9	7.3	10.9	8.1	8.4	7.7
Females	1.4	1.3	1.5	2.2	3.2	2.9	2.9	2.9
All other races								
Both sexes	29.5	25.7	25.7	41.3	35.0	24.4	27.2	26.4
Males	49.1	42.6	41.9	72.8	61.3	41.4	46.1	44.0
Females	**11.5	**10.3	11.2	13.7	12.2	9.3	10.2	10.5
Black								
Males	51.1	—	44.9	82.1	71.9	49.9	55.9	53.8
Females	11.7	—	11.8	15.0	13.7	10.8	11.8	12.3
Native American/Alaska Native								
Both sexes ³	—	23.8	19.5	23.8	18.1	14.3	16.3	—
<i>Ratio to White</i>								
All other races								
Both sexes	11.35	10.71	9.52	8.79	5.07	4.52	4.86	4.98
Males	12.59	12.17	10.74	9.97	5.62	5.11	5.49	5.71
Females	8.21	7.92	7.47	6.23	3.81	3.21	3.52	3.62
Black								
Males	13.10	—	11.51	11.25	6.60	6.16	6.66	6.99
Females	8.36	—	7.87	6.82	4.28	3.72	4.07	4.24
Native American/Alaska Native	—	9.92	7.22	5.06	2.62	2.65	2.91	—

—Not available.

* Age-adjusted rates standardized to the 1940 U.S. population.

** Age-adjusted rate where more than half of the age-specific rates are based on fewer than 20 deaths.

¹ 1950, 1960, and 1970 data are based on the Sixth, Seventh, and Eighth Revisions of the International Classification of Diseases, respectively. 1980 and later data are based on the Ninth Revision.

² Rates for 1950, 1955, and 1960 include deaths of nonresidents of the United States.

³ Rates pertain to American Indians and Alaska Natives residing in Reservation States.

Source: Compiled from (1) Department of Health, Education and Welfare, "Mortality Trends for Leading Causes of Death, U.S. 1950-69." Rockville, MD, Series 20, No. 16, Table K, p. 30, (2) National Center for Health Statistics: Advance Report of Final Mortality Statistics, 1980. Monthly Vital Statistics Report, Vol. 32, No. 4, Supplement. Department of Health and Human Services Pub. No. (PHS) 83-1120. Hyattsville, MD, Aug 1983, (3) National Center for Health Statistics, Health, United States, 1987, Department of Health and Human Services Pub. No. (PHS) 88-1232, U.S. Government Printing Office, Mar 1988, (4) Department of Health and Human Services, Indian Health Service, "Trends in Indian Health, 1989," Table 4.21, p. 48, (5) National Center for Health Statistics, Advance Report of Final Mortality Statistics, 1986. Department of Health and Human Services Pub. No. (PHS) 88-1120, Monthly Vital Statistics Report, Vol. 37, No. 6, Supplement, Sep 30, 1988, Table 12, p. 38, (6) National Center for Health Statistics, Monthly Vital Statistics Report, Vol. 38, No. 5, Supplement, Aug 28, 1987, Table 2, p. 37, (7) National Center for Health Statistics, Advance Report of Final Mortality Statistics, 1987, Monthly Vital Statistics Report, Vol. 38, No. 5, Supplement, Sep 26, 1989, Table 12, p. 29, (8) National Center for Health Statistics, Summary Report, Final Mortality Statistics, 1970, Monthly Vital Statistics Report, Vol. 22, No. 11, Supplement, Feb. 22, 1974, Table 8, p. 11.

Table 20

Age-adjusted* death rates for suicides, by race and sex: United States, selected years from 1950 To 1987 ¹

Race and sex	Year ²							
	1950	1955	1960	1970	1980	1985	1986	1987
Deaths per 100,000 population								
Total								
Both sexes	11.0	9.9	10.6	11.8	11.4	11.5	11.9	11.7
Males	17.3	15.7	16.6	17.3	18.0	18.8	19.3	19.1
Females	4.9	4.5	5.0	6.8	5.4	4.9	5.1	4.9
White								
Both sexes	11.6	10.4	11.1	12.4	12.1	12.3	12.7	12.5
Males	18.1	16.5	17.5	18.2	18.9	19.9	20.5	20.1
Females	5.3	4.8	5.3	7.2	5.7	5.3	5.4	5.3
All other races								
Both sexes	4.8	4.3	5.4	6.5	6.7	6.7	6.8	6.9
Males	7.8	7.1	8.7	10.3	11.3	11.3	11.5	11.9
Females	1.8	1.7	2.3	3.3	2.8	2.5	2.7	2.5
Black								
Males	7.0	—	7.8	9.9	11.1	11.3	11.5	12.0
Females	1.7	—	1.9	2.9	2.4	2.1	2.4	2.1
Native American/Alaska Native ³								
Both sexes	—	11.9	16.8	17.9	14.1	14.1	15.0	—
Ratio to White								
All other races								
Both sexes	0.41	0.41	0.49	0.52	0.55	0.54	0.54	0.55
Males	0.43	0.43	0.50	0.57	0.60	0.57	0.56	0.59
Females	0.34	0.35	0.43	0.46	0.49	0.47	0.50	0.47
Black								
Males	0.39	—	0.45	0.54	0.59	0.57	0.56	0.60
Females	0.32	—	0.36	0.40	0.42	0.40	0.44	0.40
Native American/Alaska Native	—	1.14	1.51	1.44	1.17	1.15	1.18	—

—Not available.

*Age-adjusted rates standardized to the 1940 U.S. population.

¹ 1950, 1960, and 1970 data are based on the Sixth, Seventh, and Eighth Revisions of the International Classification of Diseases, respectively. 1980 and later data are based on the Ninth Revision.

² Rates for 1950, 1955, and 1960 include deaths of nonresidents of the United States.

³ Rates pertain to American Indians and Alaska Natives residing in Reservation States.

Source: Compiled from (1) Department of Health, Education and Welfare, "Mortality Trends for Leading Causes of Death, U.S. 1950-69." Rockville, MD, Series 20, No. 16, Table K, p. 30, (2) National Center for Health Statistics: Advance Report of Final Mortality Statistics, 1980. Monthly Vital Statistics Report, Vol. 32, No. 4, Supplement. Department of Health and Human Services Pub. No. (PHS) 83-1120. Hyattsville, MD, Aug 1983, (3) National Center for Health Statistics, Health, United States, 1987, Department of Health and Human Services Pub. No. (PHS) 88-1232, U.S. Government Printing Office, Mar 1988, (4) Department of Health and Human Services, Indian Health Service, "Trends in Indian Health, 1989," Table 4.21, p. 48, (5) National Center for Health Statistics, Advance Report of Final Mortality Statistics, 1986. Department of Health and Human Services Pub. No. (PHS) 88-1120, Monthly Vital Statistics Report, Vol. 37, No. 6, Supplement, Sep 30, 1988, Table 12, p. 38, (6) National Center for Health Statistics, Monthly Vital Statistics Report, Vol. 38, No. 5 Supplement, Aug 28, 1987, Table 12, p. 37, (7) National Center for Health Statistics, Advance Report of Final Mortality Statistics, 1987, Monthly Vital Statistics Report, Vol. 38, No. 5, Supplement, Sep 26, 1989, Table 12, p. 29, (8) National Center for Health Statistics, Summary Report, Final Mortality Statistics, 1970, Monthly Vital Statistics Report, Vol. 22, No. 11, Supplement, Feb 22, 1974, Table 8, p. 11.

Table 21

Victimization rates* for persons age 12 and over, by type of crime, race, and ethnicity of victims

Type of crime	Ethnicity			Race		
	Total ¹ (197,769,470)	Hispanic (12,268,100)	Non-Hispanic (184,965,460)	White (169,915,280)	Black (22,725,690)	Other (5,128,510)
Crimes of violence	28.6	39.0	27.8	27.3	39.6	24.6
Completed	10.5	14.3	10.2	9.8	16.3	10.5
Attempted	18.1	24.7	17.6	17.5	23.3	14.1
Rape (completed & attempted)	.7	.5 ²	.7	.5	1.8	1.9 ³
Robbery	5.2	9.9	4.9	4.4	11.8	3.0
Completed	3.4	5.9	3.2	2.8	8.3	2.3
With injury	1.4	2.1	1.3	1.3	2.4	.8
From serious assault	.7	1.6	.6	.6	1.1	.8
From minor assault	.7	.5 ²	.8	.7	1.3	0
Without injury	2.0	3.8	1.9	1.5	6.0	1.5
Attempted	1.8	4.1	1.6	1.6	3.4	.6
With injury	.5	1.2 ²	.4	.4	1.4	0
From serious assault	.2	.8 ²	.2	.2	.4	0
From minor assault	.3	.4 ²	.3	.2	1.0	0
Without injury	1.3	2.9	1.2	1.2	2.0	.6
Assault	22.7	28.5	22.2	22.3	26.1	19.7
Aggravated	7.8	9.6	7.6	7.2	12.0	8.9
Completed with injury	2.4	1.7	2.4	2.3	3.5	3.1
Attempted with weapon	5.4	7.9	5.2	4.9	8.6	5.8
Simple	14.9	18.9	14.6	15.1	14.0	10.9
Completed with injury	4.4	6.7	4.2	4.4	3.9	3.7
Attempted without weapon	10.5	12.2	10.4	10.7	10.1	7.2
Total involving injury	9.4	12.2	9.0	8.9	13.0	9.5

Note: Detail may not add to total shown because of rounding. Numbers in parentheses refer to population in the group.

* Rate per 1,000 population age 12 and over.

¹ Total includes persons whose ethnicity was not ascertained.² Estimate is based on about 10 or fewer sample cases.

Source: Excerpted from U.S. Department of Justice. Criminal Victimization in the United States, 1987. A National Crime Survey Report: NCJ-115524, Jun 1989, Table 6, p. 18 and Table 8, p. 20, Washington, DC.

Table 22

Rate of discharges from short-stay hospitals, and average lengths of stay, by injury-related category of first-listed diagnosis and race: United States, 1982, 1984, 1985, 1986, 1987

Category of First-Listed Diagnosis (and ICD-9-CM code) and Year	Race						
	Rate of Patients Discharged Per 10,000 Population			Average Length of Stay In Days			
	All Races	White	All Other	All Races	White	All Other	Not Stated
Injury and Poisoning (800-999)							
1982	155.2	138.5	151.3	7.4	7.5	7.5	6.6
1984	148.1	132.0	149.3	6.8	7.0	6.6	5.8
1985	139.4	122.0	137.7	6.6	6.8	6.2	5.8
1986	134.7	117.0	130.9	6.4	6.5	6.8	5.5
1987	125.2	107.4	129.3	6.7	6.7	6.9	6.3
Fractures, All Sites (800-829)							
1982	49.3	46.0	33.6	10.1	10.3	9.6	9.0
1984	47.5	45.6	30.7	9.3	9.5	9.3	7.8
1985	47.6	43.2	36.6	8.7	9.1	7.6	7.4
1986	46.0	41.9	32.1	8.6	8.7	8.9	7.2
1987	43.9	38.6	35.8	8.9	8.9	9.3	8.2
Fracture of Neck of Femur (820)							
1982	9.9	9.9	3.6	18.6	18.6	19.8	17.8
1984	10.4	10.6	3.3	15.8	15.8	17.9	13.8
1985	10.9	10.8	4.2	14.7	14.9	14.7	12.4
1986	10.5	10.4	3.3	14.2	14.2	18.8	12.0
1987	10.3	9.7	4.6	13.9	13.8	16.7	13.2
Sprains and Strains of Back (Including Neck) (846-847)							
1982	13.3	11.6	15.9	7.4	7.4	8.2	6.5
1984	11.5	9.7	15.8	6.4	6.4	6.7	6.0
1985	10.0	8.6	11.2	6.0	5.8	6.6	6.7
1986	8.0	7.2	7.6	5.6	5.2	6.4	6.8
1987	6.6	5.7	6.7	5.4	5.4	5.7	5.0
Intracranial Injuries (Excluding Those With Skull Fracture) (850-854)							
1982	12.4	10.9	13.2	5.6	5.6	6.5	4.7
1984	11.5	9.9	11.8	5.3	5.4	6.2	3.4
1985	11.3	10.3	10.2	5.6	5.9	5.7	2.9
1986	11.1	9.4	12.2	5.0	4.8	7.0	3.2
1987	9.8	8.6	10.9	5.8	6.1	4.9	5.0
Lacerations and Open Wounds (870-904)							
1982	14.3	11.4	23.6	5.3	5.4	5.4	4.6
1984	13.5	10.2	25.3	4.5	4.6	4.7	2.8
1985	11.7	8.8	19.6	4.3	4.5	4.0	4.1
1986	11.9	8.7	20.5	4.5	4.5	4.6	3.6
1987	10.8	7.8	19.0	4.0	4.0	4.0	4.0

Source: Compiled and abstracted from (1) National Center for Health Statistics, E.J. Graves, "Utilization of Short-stay Hospitals, United States, 1982. Annual Summary." Vital and Health Statistics, Series 13, No. 78. Department of Health and Human Services Pub. No. (PHS) 84-1739. Washington, U.S. Government Printing Office, August 1984, Table 10, pp. 32-33, (2) National Center for Health Statistics, E.J. Graves, "Utilization of Short-stay Hospitals, United States, 1984." Vital and Health Statistics, Series 13, No. 84, (PHS) 86-1745, Washington, U.S. Government Printing Office, April 1989, Table 10, pp. 32-33, (3) National Center for Health Statistics, E.J. Graves, "Utilization of Short-stay Hospitals, United States, 1985." Vital and Health Statistics, Series 13, No. 91, Department of Health and Human Services Pub. No. (PHS) 87-1752. Washington, U.S. Government Printing Office, May 1987, (4) National Center for Health Statistics, E.J. Graves, "Utilization of Short-stay Hospitals United States, 1986. Annual Summary." Vital and Health Statistics, Series 13, No. 96, Department of Health and Human Services Pub. No. (PHS) 88-1757, Washington, U.S. Government Printing Office, Table 10, pp. 32-33, (5) National Center for Health Statistics, E.J. Graves "National Hospital Discharge Survey: Annual Summary, 1987." Vital and Health Statistics, Series 13, No. 99, Apr 1989, Table 10, p. 33.

Table 23

Ratio of hospitalization rates for unintentional injuries, 1982-1987

	Ratio of Rate for Minority to Rate for Whites, by Year				
	1982	1984	1985	1986	1987
Injury & Poisoning					
Discharge Rate	1.09	1.13	1.13	1.12	1.20
Avg. Length of Stay	1.00	0.94	0.92	1.05	1.03
Fractures, All Sites					
Discharge Rate	0.73	0.67	0.85	0.77	0.93
Avg. Length of Stay	0.93	0.98	0.83	1.02	1.04
Sprains & Strains of Back					
Discharge Rate	1.37	1.63	1.30	1.06	1.18
Avg. Length of Stay	1.11	1.05	1.14	1.23	1.06
Intracranial Injuries					
Discharge Rate	1.21	1.19	0.99	1.30	1.27
Avg. Length of Stay	1.16	1.15	0.97	1.46	0.80
Lacerations & Open Wounds					
Discharge Rate	2.07	2.48	2.45	2.36	2.44
Avg. Length of Stay	1.00	1.02	0.89	1.02	1.00

Source: Compiled and abstracted from (1) National Center for Health Statistics, E.J. Graves, "Utilization of Short-stay Hospitals, United States, 1982. Annual Summary." Vital and Health Statistics, Series 13, No. 78. Department of Health and Human Services Pub. No. (PHS) 84-1739. Washington, U.S. Government Printing Office, August 1984, Table 10, pp. 32-33, (2) National Center for Health Statistics, E.J. Graves, "Utilization of Short-stay Hospitals, United States, 1984." Vital and Health Statistics, Series 13, No. 84, (PHS) 86-1745, Washington, U.S. Government Printing Office, April 1989, Table 10, pp. 32-33, (3) National Center for Health Statistics, E.J. Graves, "Utilization of Short-stay Hospitals, United States, 1985." Vital and Health Statistics, Series 13, No. 91, Department of Health and Human Services Pub. No. (PHS) 87-1752. Washington, U.S. Government Printing Office, May 1987, (4) National Center for Health Statistics, E.J. Graves, "Utilization of Short-stay Hospitals United States, 1986. Annual Summary." Vital and Health Statistics, Series 13, No. 96, Department of Health and Human Services Pub. No. (PHS) 88-1757, Washington, U.S. Government Printing Office, Table 10, pp. 32-33, (5) National Center for Health Statistics, E.J. Graves "National Hospital Discharge Survey: Annual Summary, 1987." Vital and Health Statistics, Series 13, No. 99, Apr 1989, Table 10, p. 33.

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A. Introduction**1. Overview of Findings**

Human immunodeficiency virus (HIV) infection is a relatively new, fatal disease which is testing the ability of governments, societies, and individuals to confront and respond to a major health care problem. The first cases of what is now known as acquired immunodeficiency syndrome (AIDS) were identified in the U.S. in 1979, among homosexual men who had a rare form of cancer and/or pneumocystis carinii pneumonia, a rare infection. (1) However, most researchers now believe that HIV may have been infecting individuals in some countries (including the U.S.) for ten years or more before then.

More than 117,781 cases of AIDS had been reported in the U.S. through 1989 (2), and an estimated 1 to 1.5 million Americans are currently infected with the human immunodeficiency virus (HIV). (3) Black and Hispanic Americans have been disproportionately affected by HIV, as is demonstrated in both HIV seroprevalence and in the numbers of reported cases of AIDS; for example, 56 percent of total cumulative U.S. cases thus far have been among Whites, compared with 26 percent among Black Americans and 15 percent among Hispanics. This is compared to the population representation of minorities in which Blacks comprise 12 percent, and Hispanics 6 percent of the total population in the United States. In addition, 51 percent of all female cases of AIDS were among Black women and 52 percent of all pediatric

cases of AIDS were among Black infants; 19 percent of female cases were among Hispanic women and 24 percent of pediatric cases were among Hispanic infants.

Minorities are over-represented in the transmission categories related to intravenous (IV) drug use. Of all the AIDS cases among IV drug abusers, 43 percent have been Black, and 25 percent have been Hispanics. Studies have shown that minority status and IV drug use may interact to create an extremely high risk of exposure to HIV.

In calculating the relative risk of AIDS by race, ethnic group, age, risk behavior and geographic area, researchers have found that the risk of AIDS in Black and Hispanic men was almost three times as great as that in White men. More significantly, they found that Black women and Black children had 13.2 and 11.6 times the risk of AIDS, respectively, compared to their White counterparts. Additionally, two particular populations—the homeless and prisoners—are at particular risk of contracting AIDS.

At this time, prevention is the only known means of controlling the AIDS epidemic. Yet, information that is available indicates that racial/ethnic differences exist in knowledge and attitudes regarding HIV and AIDS. In general, minorities surveyed were less aware of the risks and the specific prevention measures relating to transmission of HIV.

2. Data Sources and Their Limitations

The reader is cautioned that epidemiological data

regarding HIV and AIDS are considered by many to be low estimates, and that projections of seroprevalence and cases range considerably. This is true because assumptions underlying these epidemiological estimates and projections are necessarily based on information that is not verifiable (e.g., homosexual/bisexual activity, extent of prostitution and practices of prostitutes, and intravenous drug use). Epidemiologic data and information are particularly difficult to obtain for minority and low income populations, in view of the fact that household surveys and other commonly used forms of data collection underrepresent those populations. This is even more true for minorities who are intravenous drug abusers, a population of increasing concern in the HIV epidemic.

3. Understanding the Virus and Its Manifestations

AIDS was originally referred to as "the gay disease", because the earliest cases occurred among gay men. Later in 1981, when it became apparent that the disease was affecting, at least, intravenous (IV) drug users and hemophiliacs as well, it was called "Acquired Immune Deficiency Syndrome" or AIDS. Subsequently, health care professionals identified a series of non-life threatening illnesses among those who are infected with HIV. These manifestations were termed AIDS-Related Complex, or ARC. The virus itself is referred to as the Human

Immunodeficiency Virus, or HIV. Increasingly, in recognition of the health needs of those infected with the virus (including those without symptoms), those with AIDS and those with ARC, health officials are calling for a change in the focus of public policy discussion from the disease AIDS alone to the entire spectrum of HIV infection. According to Myers,

"HIV infection itself [is] a disease, with a continuum of conditions, ranging from the acute, transient, mononucleosis-like syndrome associated with seroconversion, to asymptomatic HIV infection, and finally to AIDS. Viewing HIV infection as a disease is important because it allows for early diagnosis of opportunistic infections and malignancies, and encourages development of an effective therapy for infected, asymptomatic patients. From a public health perspective, it encourages identification of the population that is of critical importance to the spread of the disease: asymptomatic individuals capable of infecting others." (4)

HIV is known to be contracted in primarily four ways:

- 1) through sexual intercourse,
- 2) through shared use of contaminated intravenous (IV) needles,
- 3) through infected blood supplies (very unlikely in the U.S. now, because donated blood has been screened since 1985), and

- 4) through transmission from an infected mother to infant during pregnancy or at birth.

In addition, accidental contact with blood and needles in health care and health research settings has been a documented means of transmission in 19 cases in the U.S.

HIV belongs to the class of viruses known as retroviruses; specifically, HIV attacks the T4 lymphocyte cells, thus impairing or destroying the ability of the body to ward off infections, particularly certain types, which are referred to as "opportunistic infections". One of the problematic aspects of HIV is the timing of presentation of antibodies and illnesses that result from HIV infection. The most widely-used test for presence of HIV is the enzyme-linked immunosorbent assay (ELISA) blood test; the Western Blot test is used to confirm positive ELISA results. However, research has shown a lag time of a year or more between infection and production of antibodies to which the ELISA screening test is sensitive. (5) This has obvious implications for the data on which prevalence estimates are based, as well as raising questions about the use of screening tests as part of a prevention program. False negative results can give someone who is in an at-risk exposure category (e.g., homosexual male or intravenous drug user) a false sense of security and could alter his/her preventive actions.

Once a person is infected with the virus, how likely is it

that he or she will seroconvert, and how likely is it that an infected or seropositive person will develop manifestations of the disease? No one knows exactly. This is because the virus and the illnesses associated with it are so variable, and also because reliable information on which to base precise estimates of "progression" from symptomless HIV infection to manifestations of the disease is lacking. Some present estimates of progression from HIV infection (that is, those who are currently infected with the virus according to the detection of antibodies by the Western Blot test) to AIDS vary considerably. Those most widely cited are:

- 1) between 30 percent to 50 percent of those who are HIV positive will progress to the disease within five years, and
- 2) up to 75 percent of those who are HIV positive will have the disease within seven years.

It should be noted that as recently as 1986, researchers were estimating that only 10 percent of those infected with HIV would eventually develop AIDS. (6) The changes in estimates over time result in large part from the facts that (i) there is a lag time between infection and the development of the disease and of laboratory findings used to diagnose AIDS, and that (ii) more seroprevalence data are becoming available for use in follow-up studies.

The median interval between infection with HIV and onset of AIDS is nearly 10 years. (3) The estimates of the prevalence of HIV-related diagnoses other than AIDS are even more uncertain than those for AIDS because the

data are more scarce and the illnesses more difficult to attribute to HIV (e.g., fever, upper respiratory infections). However, the prevalence of such conditions has important implications for utilization of the health care system, so researchers are increasingly interested in developing epidemiologic data.

The U.S. Centers for Disease Control (CDC) revised the surveillance case definition for AIDS in August, 1987, in part to improve surveillance of AIDS cases. (7) In the U.S., the most common of the diagnoses (opportunistic infections or illnesses associated with AIDS) are:

- Pneumocystis carinii pneumonia (PCP),
 - chronic, persistent infection with cytomegalovirus (CMV),
 - severe, prolonged candidiasis (yeast infections),
 - unusually extensive herpes of prolonged duration,
 - toxoplasmosis,
 - an unusual form of tuberculosis, and
 - Kaposi's sarcoma (KS).
- (8)

B. Scope of the Problem

1. Prevalence of HIV

The CDC has estimated that between 1 and 1.5 million Americans are currently infected with the virus. (3) No national HIV seroprevalence studies have been conducted in the U.S., but the results of several population studies of seroprevalence suggest significant differences in racial/ethnic distribution of HIV positivity. In a study of military recruits conducted in 1985-86, the CDC found that the seroprevalence rate was

9/10,000 for Whites and 39/10,000 for Blacks. (9) A study of blood donors conducted by the American Red Cross in 1985-1988 showed overall seroprevalence among persons donating for the first time as 4.2/10,000. According to the CDC, while these rates cannot yet be adjusted by race, they are higher for Blacks and Hispanics than for Whites. (3) A study conducted in Atlanta, Baltimore, and Los Angeles between March, 1985, and July, 1986, also found striking differences; seropositivity was 2/10,000 for Whites, 9/10,000 for Hispanics and 31/10,000 for Blacks. (10) Curran has calculated that, assuming that 1.5 million Americans are infected with HIV, 0.5 percent of Whites are infected, but 1.5 percent of Blacks and 1.5 percent of Hispanic Americans are infected. (11)

An indicator for unsafe sex practices (e.g., non-monogamous sex or anal intercourse without use of condoms), and thus an indicator for HIV seroprevalence, is the prevalence of syphilis. Comparison of HIV with syphilis must be tempered by the fact that syphilis appears to be more readily transmitted, at least in vaginal intercourse, than HIV. Rates of syphilis have decreased for White males since the onset of AIDS prevention programs, but have increased for Black males, according to a number of studies; in some studies the increase has been significant. (12) (13) One of these studies, conducted in Georgia, also found differences by income group, with low-income individuals showing an increase in syphilis. National data for increases in primary and secondary syphilis for the years 1986-1987 also show

significant increases for Blacks and Hispanics, as compared with Whites. For example, the rate per 100,000 persons 15 to 64 increased 36 percent for Black males (106.2 to 144.9 per 100,000) and 43 percent for Black females (55.5 to 79.4 per 100,000). The CDC reported that for Hispanics, the increases were 22 percent for males (2.2 to 2.6 per 100,000) and 24 percent for females (17.8 to 22.0 per 100,000). The rate for White males actually decreased in the same time period (6.4 to 5.7 per 100,000), while it increased for White females, although not as much as for Blacks and Hispanics (7 percent, from 2.2 to 2.6 per 100,000). (14)

In a national study of HIV prevalence among prostitutes in seven geographic areas in the U.S., Black and Hispanic prostitutes had higher seroprevalence rates than did Whites. Of the 280 Black or Hispanic prostitutes tested, 15.4 percent were HIV positive, vs. 6.7 percent of the 284 White prostitutes tested. Acknowledged IV drug use may have been a factor in the disparate rates among the racial/ethnic groups, although 25 percent of the Black or Hispanic IV drug user prostitutes were HIV positive, vs. 10.2 percent of White prostitutes who also acknowledged IV drug use. (15)

HIV-antibody screening data for Job Corps applicants is perhaps the most useful available data to estimate HIV prevalence among economically disadvantaged youth. Applicants, all of whom are economically disadvantaged, range in age from 16 to 21. Most are from racial and ethnic minorities and they include both inner-city and rural poor. Of the

84,089 residential Job Corps entrants tested since March, 1987, 41/10,000 were positive for HIV antibody. (3) Unfortunately, Job Corps data are not disaggregated by race or ethnicity.

2. *Reported AIDS Cases*

According to statistics reported by the states to the CDC, as of 1989, a total of 117,781 persons in the U.S. had been reported as contracting the disease since the CDC began reporting AIDS cases. (2) Although the annual rate of increase in reported cases has slowed since the early and mid-1980s, when reported cases were doubling each year, the number of new cases reported in the U.S. each month remains high. Between April and September, 1989, there was an average of 2942 new cases reported monthly. (16) It should be noted that these reporting periods are subsequent to the August, 1987 change in the CDC case definition of AIDS, which resulted in 11,945 cases being added to the cumulative number. (17) (18)

Table 1 presents the reported AIDS cases by racial/ethnic group, age, and sex for the years 1982 (including cases identified prior to that year) through 1988. Table 2 shows the distribution of total cumulative cases through 1988, by transmission category, race/ethnic group, and sex.

Of the 117,781 diagnosed AIDS cases nationwide thus far, the majority (61 percent) have been homosexual or bisexual males who are not also IV drug abusers. The second-highest exposure category (28 percent of reported cases) are IV drug abusers, including those who were heterosexual and homosexual or bisexual males and females. The remaining exposure

categories are heterosexuals who are not IV drug abusers (5 percent) and blood transfusion recipients (2 percent). The risk to blood transfusion recipients has significantly decreased since the screening of blood donations began in 1984. In only three percent of cases is the means of transmission unknown.

3. *Age/Sex Distribution of AIDS Cases*

Ninety percent of the reported adult cases through 1989 were males. However, the distribution is changing; as of December, 1986, 93 percent of diagnosed cases were males. (19) In general, the disease affects relatively young persons: 60 percent of those diagnosed through 1989 were males between 20 and 39 years of age, and 7 percent were females in the same age group. Pediatric cases are of increasing concern. As of the end of 1986, there had been 410 reported cases in children 12 years and younger (less than 1 percent of the total number of cases). However, by the end of 1989, the total number had increased to 1,995, or 1.7 percent. (2)

Adolescent HIV infection is also of considerable concern. As of December, 1986, there had been 127 diagnosed cases among those 13 to 19 years of age (39 percent of whom were Black, 38 percent White, and 20 percent Hispanic). (19) As of December 1989, 461 adolescents had been diagnosed with AIDS (43 percent of whom were White, 36 percent Black, and 18 percent Hispanic). Six Asian/Pacific Islander adolescents have been diagnosed, as have four American Indians/Alaskan Natives. (2)

C. *Distribution and Transmission of AIDS*

1. *Racial/Ethnic Distribution of AIDS Cases Among Population Groups*

Although 56 percent of the known cases in the U.S. have been among White Americans, Black and Hispanic populations are disproportionately at risk of contracting the virus. For example, as Table 3 shows, as of the end of 1988, although 27 percent of the cumulative reported cases have been Black Americans, Blacks represent only 12 percent of the entire U.S. population. (20) Therefore, one can say that thus far, AIDS is affecting the Black population twice as severely as the general population. The same is true for Hispanics, who made up 13 percent of reported cases, but who represented only 6 percent of the population. In addition, among all adult females with AIDS, 54 percent are Black (Table 3). More than half (55 percent) of all pediatric AIDS cases are among Blacks and 20 percent are among Hispanics. One percent of cases had been among Asian and Pacific Islanders as of the end of 1988, and there were less than 1 percent of cases (84) among American Indians/Alaskan Natives.

Between 1982 and 1987, there was no significant change in the percentage of reported cases by race or ethnicity (see Table 4). For those years, an average of 60 percent of cases were White, 26 percent were Black, and 13 percent were Hispanic. However, in 1988 and 1989, there were substantial increases in the proportion of minority members diagnosed over 1987: 29 percent of the cases reported in 1988 and 30 percent of newly reported cases as of November, 1989

were Black, vs. 25 percent in 1987. Eighteen percent of the cases in 1988 and 16 percent of the new cases as of November, 1989 were Hispanic, vs. 12 percent in 1987. (17) (21) For cumulative cases 1981-1988, the rate per 100,000 population has been 84 per 100,000 among Blacks, 73 per 100,000 among Hispanics, and 26 per 100,000 among Whites. The rates are substantially lower for Asian and Pacific Islanders (14 per 100,000) and American Indian/Alaskan Natives (6 per 100,000). (3)

2. Racial/Ethnic Differences in Transmission Categories

Table 4 shows the distribution of reported cases by transmission category, sex and year (through 1988) for Whites, Blacks, and Hispanics. Although some of the differences are undoubtedly explained by racial and ethnic groups' differential probabilities of sharing needles, becoming ill (with AIDS-related or other illnesses), and using emergency rooms, these findings support others which seem to indicate an over-representation of Blacks and Hispanics among IV drug abusers. For example, recent National Institute on Drug Abuse (NIDA) data on drug-related deaths show that 30 percent of those whose deaths were reported from 27 metropolitan areas for 1988 were Black, and 13 percent were Hispanic. This excludes deaths in which AIDS was reported. Thirty percent of all drug-related deaths in 1988 were among Blacks and 13 percent were among Hispanics. (22) Notably, these are the same percentage breakdowns as AIDS cases for 1988. For all

drug-related deaths in 1987, the mortality-race ratio was 2.2 for Black and White deaths. (23)

Minorities are over-represented in the transmission categories related to IV drug use. Of the 32,329 cumulative AIDS cases among IV drug abusers as of December 1989, 44 percent have been Black and 25 percent have been Hispanic. (2) Moreover, 51 percent of the 2,871 adult heterosexual cases involving sexual contact with an IV drug user have been among Blacks and 26 percent of such cases have been among Hispanics. (2)

Minority males are significantly over-represented in this transmission category. Of the 24,212 cases attributed to IV drug use with no homosexual/bisexual contact, 50 percent have been Black and 29 percent Hispanic, compared with 20 percent White. When IV drug users with homosexual/bisexual contact are added, the differences are reduced somewhat: 44 percent, 25, percent, and 30 percent for Black, Hispanic and White, respectively. (2)

For minority women, the differences are even more striking; as of the end of 1989, 58 percent of all AIDS cases among Black women are in this transmission category (IV drug use); 52 percent of all Hispanic female AIDS cases; and 41 percent of White female AIDS cases. (2) When women who have had sex with an IV drug user (but who are not themselves IV drug users) are added to this category, the differences are more prominent: 76 percent and 83 percent of all Black and Hispanic women, respectively, as compared with 55 percent of White

women, have contracted HIV because of IV drug abuse (their own or their sexual partner's). (2)

The findings of Bakeman et

reference group) are listed below in order of Relative Risk (which is shown in parentheses), by age breakdown:

Black women	≥ 15 years (13.2)
Black children	< 15 years (11.6)
Hispanic women	≥ 15 years (8.1)
Hispanic children	< 15 years (6.6)
Black men	≥ 15 years (2.8)
Hispanic men	≥ 15 years (2.7). (25)

al. suggest that minority status and IV drug use may interact to create an extremely high risk of exposure to HIV. According to their analysis of CDC data as of April, 1987:

"The numbers of cases among Black and Latin IV drug using men were 22.6 and 21.4 times the rate of white male IV drug users," and
 "The numbers of cases among Black and Latin IV drug using women were 17.9 and 11.2 times the rate of White female IV drug users." (24)

Selik et al. calculated the relative risk of AIDS by race and ethnic group, age, risk behavior, and geographic area, based on CDC data for 1981 through January, 1988. (25) The authors found that "overall, the risk (cumulative incidence) of AIDS in Blacks and Hispanics was almost three times as great as that in Whites." (25) They also found important risk differences by sex: Black and Hispanic women were, respectively, 13.2 and 8.1 times more likely to be at risk than White women, while Black and Hispanic men were 2.8 and 2.7 times more likely to be at risk than White men. Notably, other racial/ethnic groups (e.g., American Indians and Asian Americans) are less at risk than are Whites, according to this analysis. The racial/ethnic groups most at risk (using Whites as the

Selik et al.'s geographic analysis showed that relative risk of AIDS among both Blacks and Hispanics was higher in the East and Midwest than in the West and South. In fact, according to their analysis: "In the West, the risk of Hispanics was actually less than that in Whites for AIDS in exclusively homosexual men and for AIDS overall." (25) The cumulative incidence and relative risk by racial/ethnic group, exposure category, and geographic area, as calculated by Selik, et al., are shown in Table 5.

Nearly 20 years ago, Ball and Chambers, among others, found that minorities were overrepresented among IV drug abusers. (26) Recent data show that this phenomenon has not changed. For example, according to emergency room data reported to the National Institute for Drug Abuse in 1988, 41 percent of heroin/morphine addiction diagnoses were among Blacks, and 13 percent were among Hispanics. (27)

Peterson and Morin as well as Mays and Cochran have pointed out important differences in attitudes and beliefs, information sources and access, lack of social networks, high risk sexual behavior, and sharing of IV needles (for illicit drug use as well as for medications and

vitamins) among Black and Hispanic Americans. These differences have important implications for transmission as well as for prevention programs. (28) (29)

3. *Distribution of AIDS Cases Among Low Income Populations*

The only published article specifically addressing AIDS among low income populations was based on 40 cases reported to a New York City hospital between July, 1981, and February, 1983. Most (28) were IV drug abusers and only 11 were homosexual (two of whom were also IV drug abusers). Twenty-four were Hispanic, ten Black, and six White. Ninety percent of the patients had opportunistic infections, while 10 percent had Kaposi's sarcoma; significantly, 10 percent had tuberculosis. This patient population had a very high mortality rate: 34 percent died during initial hospitalization and 74 percent were dead within one year. (30)

4. *AIDS Cases Among the Homeless and Prisoners*

Two additional populations—the homeless and prisoners—are of particular concern. Prisoners have shown higher seroprevalence rates than those for the general population. This is to be expected in view of the fact that prisoners are overrepresented by current or former IV drug abusers. Of the seroprevalence studies of prisoners conducted in 1987/88, the results ranged from 0.0 percent of 113 new inmates tested consecutively in Indiana to 17.4 percent of 494 new inmates tested in New York. (3) Moreover, when released to the general population, prisoners raise the risk to their sexual

partners, and to children who result from their sexual relations.

The Presidential Commission called attention to the potentially explosive situation among the homeless, noting that there are an estimated 400,000 to three million homeless persons in the U.S. In a study of homeless adolescents in New York, 40 percent of those tested were HIV positive. (31) HIV itself is a causal factor in homelessness, as noted by the Commission:

"Persons with HIV infection may become homeless when job discrimination or the debilitating effects of the disease result in inability to work and inability to continue paying medical insurance premiums, medical bills, or rent." (31)

D. *AIDS Mortality*

Table 6 shows the distribution of recorded deaths attributed to AIDS through 1988, by age and sex for Whites, Blacks, and Hispanics. Of the more than 117,781 cases which had occurred in the U.S. as of the end of December, 1989, 60 percent had died. (2) According to the CDC, 85 percent of those diagnosed prior to 1986 have died. (3) In 1987, HIV infection was the 15th leading cause of death overall. (23) AIDS itself is not the direct cause of death, rather, the patients die as a result of the opportunistic infections that they contract. Of the nearly 50,000 who have died from AIDS as of February, 1989, the primary diagnosis (not necessarily the cause of death) was as follows:

- * 61 percent had a diagnosis of

pneumocystis carinii pneumonia (PCP);

- * 31 percent had a diagnosis of one or more of the other opportunistic infections; and
- * 9 percent had a diagnosis of Kaposi's sarcoma. (17)

In the United States, racial/ethnic differences are also found in the types of opportunistic infections. For example:

- * both male and female adult heterosexual pneumocystis carinii pneumonia (PCP) patients were disproportionately likely to be Black or Hispanic; and
- * other opportunistic infections, including tuberculosis for example, were more common among Black AIDS patients than among other AIDS patients as well as among the general population of non-AIDS patients. (32)

According to the CDC, HIV infection-related tuberculosis "appears to have had a substantial impact in some areas . . . [and the] minority population in some areas have been at particular risk of HIV-related TB." (33)

Blacks and Hispanics with AIDS may have a slightly higher death rate from HIV infection than do Whites. Overall, of the 32,248 cumulative diagnosed cases among Blacks as of the end of 1989, 60 percent had died; of the 18,284 cumulative cases among Hispanics, 58 percent had died. Similarly, 59 percent of the total 66,081 reported White cases had died during the same period. (2) Table 7 shows the distribution of deaths by race, sex and exposure category through November, 1988. For Black and Hispanic

Americans in 1987, HIV infection was the ninth leading cause of death; for Whites, it was not among the 10 leading causes of death. (23)

A number of reasons have been proposed for the differences in life-expectancy after diagnosis; these include:

- * the higher percentage of Black and Hispanic cases who are IV drug users, with a generally poorer health status;
- * delay in diagnosis among minority and low-income populations (Blacks and Hispanics are over-represented among low-income populations);
- * longer mean survival times among those whose initial AIDS-related diagnosis is Kaposi's sarcoma (KS) (34) (Blacks and Hispanics are less likely to have a diagnosis of KS than are Whites). There are virtually no published data regarding mortality by income group.

1. *AIDS Prevention Among Minority Populations*

Although Black and Hispanic populations are disproportionately at risk for HIV and AIDS, their level of risk is largely dependent upon the degree to which individual members of these racial/ethnic groups engage in risk-related behaviors. Thus, an individual's general knowledge about HIV and its transmission and his/her ability to make health-protective decisions, are critical in risk reduction. Information is becoming available that points to racial/ethnic group differences in

knowledge/attitudes regarding HIV and AIDS.

For example, according to a recent report of results of the National Health Interview Survey conducted in November, 1987, 22 percent of White adults stated that they know a lot about AIDS, compared to 14 percent of Black adults. (35) The proportion of White adults responding to the same survey who indicated that they knew nothing about AIDS was 9 percent, compared to a startling 26 percent of Black adult respondents. (35) When the same survey was conducted in early 1989, only 24 percent of Whites and 19 percent of Blacks reported that they knew a lot about AIDS. This does not appear to be a significant increase, given the extent of dissemination of information to the general public, and the expressed concern for prevention on the part of the public and private sectors. Importantly, 7 percent of Whites and 15 percent of Blacks respectively reported that they knew nothing about AIDS. (36) According to the 1988 NHIS, 84 percent of Hispanic adults responding felt that they knew a lot, and 13 percent thought that they knew nothing. (37) Black adult respondents to the 1989 survey were consistently less knowledgeable about prevention methods in terms of sexual transmission than White adults. For example, while only 2 percent of White adults responded "Don't know method" when asked about the effectiveness of condoms in preventing AIDS, 5 percent of Black respondents did not know the method. These results are in contrast to 80 percent of Whites and 81 percent of Blacks who had seen a

public service announcement regarding AIDS on television in the previous month, 43 percent of Whites, and 51 percent of Blacks who had heard radio broadcasts of public service announcements, and 23 percent of Whites and 32 percent of Blacks who reported ever having read any brochure or pamphlet about AIDS. Eighty-four percent of Hispanics had seen televised public service announcements, and 56 percent had heard radio broadcasts of public service announcements in the previous month. (37) In view of the fact that the response implied that they were not familiar with the methods of contraception (including condoms and spermicides) at all (that is, generally in terms of sexual intercourse), these results have implications for family planning as well as for prevention of transmission of HIV and other sexually transmitted diseases.

In a study of AIDS knowledge and attitudes among 628 adolescents in San Francisco high schools, DiClemente et al. found substantial differences by racial/ethnic group. While nearly 72 percent of White youth reported that they were aware that using condoms would decrease the risk of transmission of HIV, only 60 percent of Black youth and 58 percent of Hispanic youth were so aware. (38) The earlier-referenced report of syphilis rates in Atlanta is also indicative of racial/ethnic differences in effectiveness of AIDS prevention campaigns, in view of the fact that the Atlanta area had been the target of broad-based AIDS prevention programs. In another recent study of AIDS knowledge among 250 adolescent girls (81 percent of whom were Blacks residing in urban areas),

while 90 percent knew that unprotected sexual intercourse placed them at risk for AIDS, only 38 percent of them had used a condom when they had most recently had sex, and 72 percent did not know that use of a spermicide can reduce the risk of HIV infection. (39)

The distribution of cases by risk behavior category is important in terms of prevention because some public health officials are seeing IV drug abusers and prostitutes and the sexual partners of both of these populations as the groups of increasing concern in terms of relative risk. This is true in part because from the beginning of the epidemic many of the known successful prevention programs have been initiated by community-based gay organizations that, for the most part, have been sought out by White males. Although prevention activities directed at both the general public and at other target populations (including racial/ethnic minorities and IV drug abusers) have increased substantially in the past two years, there is little evidence of success of these prevention programs. In fact, there is some evidence that AIDS prevention programs have been relatively unsuccessful in minority, low-income communities. (40)

While there were calls early on in the epidemic for targeted prevention programs, these needs have only recently been addressed. At the community level, most grassroots programs have been developed by the predominantly White gay community in the early 1980s. In 1987, however, prevention activities began to expand in minority communities,

including local and national organizations (e.g., the Southern Christian Leadership Conference, Black Coalition on AIDS, and local churches). (41) At the federal level, the CDC, National Institute of Drug Abuse, Office of Minority Health, Health Resources and Services Administration, and other agencies have begun to fund research and demonstration projects directed toward minority populations.

Resource allocations do not reflect the relative seriousness of the problem in minority groups; for example, while CDC expenditures for AIDS prevention have expanded considerably from \$136 million in Fiscal Year 1987 to a projected \$400 million for Fiscal Year 1989, (42) less than 10 percent of those funds are targeted to the minority population. In fact, of the \$3.1 billion estimated by the Presidential Commission on the Human Immunodeficiency Virus Epidemic as needed to carry out its recommendations, less than 10 percent (\$300 million) was allocated to prevention. (31)

E. AIDS Treatment Among Minority and Low Income Populations

Most AIDS patients in the U.S. are treated in hospitals. Treatment is provided for the illnesses (or infections) that the patient has contracted as a result of AIDS (for the pneumonia, or Kaposi's sarcoma), and where available, AZT is provided in an attempt to slow the progression of the disease. Some large urban hospitals also have hospices and home health care arrangements; group homes operated by private voluntary groups (primarily gay organizations) are also available in some urban areas.

Estimates of the cost of AIDS treatment vary considerably, depending on the assumptions made about life expectancy, utilization of hospital-based versus home health or voluntary care, and geographic location. The average estimated lifetime cost (i.e., an average per month of post-diagnosis remaining lifetime) for treating an AIDS patient following diagnosis in this country ranges from approximately \$7,000 per month for inpatient care alone in San Francisco (43), to \$7,000 per month for both inpatient and outpatient care in Boston. (44)

The Presidential Commission on HIV reported that the average cost of home health care for HIV infection is \$15,000 per year, and the average cost of nursing home care is \$24,000 to \$60,000. (31) A study of home-based hospice care in San Francisco showed monthly costs of \$2,820. However, the Presidential Commission also noted that few nursing homes in the U.S. accept "patients with advanced HIV illness." (31)

Given the high-cost of AIDS treatment in the United States, to what degree is the economic impact differentially felt among minority and low income populations? Nationally, the percentage of persons under 65 years of age who are covered by private health insurance decreased since 1980, from 78.8 percent to 75.9 percent in 1986. (21) Blacks (who are at much higher risk for AIDS) are much less likely to have private health insurance; for example, 57 percent of Blacks were covered in 1986 vs. 79.1 percent of Whites. Similarly, only 31.3 percent of those earning less than \$10,000 had private health

care coverage, and only 58.1 percent of those earning between \$10,000 and \$14,999 were so covered (as compared with 88.3 percent of those earning between \$20,000 and \$34,999). (21) Importantly, 22.6 percent of Blacks, and 37 percent of those earning less than \$10,000 were not covered by any type of health insurance. (21)

Krieger has noted that, while "the overall cost of AIDS . . . remains low in comparison to the major causes of morbidity and mortality (e.g., accidents, violence, cancer, and cardiovascular disease)," the fiscal impact of AIDS is hardest on those geographic areas most severely hit by the disease, which are also areas in which large percentages of the population are minorities and low income. (45) For example, in New York City, AIDS was the leading cause of death among men 25 to 44 and women 25 to 34 in 1986, and projections of newly reported cases in 1991 range from 8,300 to 20,000. (46) In terms of health services utilization, the NYC Department of Health has estimated that there were 70,000 New York City residents with ARC in 1986. (46) Most of the patients in NYC are low-income minorities, and the financial burden of their care falls heavily on the public health system and on voluntary groups in New York. In 1985, for example, 20 percent of New York City's AIDS patients were not covered by any type of health insurance. (45)

It is important to note that the concept of "low income" has to be reconsidered when discussing AIDS. According to the Presidential Commission on HIV:

"Overall, the provision of health care services to

Blacks and Hispanics has been hampered by the large number of uninsured persons, i.e., persons with neither public nor private health insurance, including significant numbers who are employed." (31)

The socioeconomic impact of the disease has, in fact, created a new, large group of medically indigent individuals, including:

- * those who were covered by private health insurance through their employers and who have been terminated from employment because of their disease;
- * those who remain covered by private health insurance companies, but who must pay out of pocket for diagnostic tests and treatment procedures determined to be related to experimental treatment and thus not covered through the medical insurance; and
- * those not previously privately insured (e.g., self-employed individuals) who have had to "spend down" to become eligible for Medicaid.

Examining the percent distribution of AIDS deaths by family income in 1986 (the latest available data) indicates that 43 percent had incomes less than \$11,000. (47) In 1986, this would have been below the poverty line. When the percent distribution of AIDS deaths was examined by assets at death, the largest group, 38 percent, had no assets at death, and 28 percent had assets below

\$5,000. Only 23 percent had assets of \$25,000 or more. (31)

Further, while all states' Medicaid agencies provide coverage to eligible individuals and their families, the covered services and eligibility criteria vary considerably by state (see Table 8). The Presidential Commission noted that ". . . the great variability in Medicaid coverage by states creates totally different service pictures in states such as Texas, Florida, Mississippi, and Alabama as compared to New York or California." (31)

Medicare, the only other major public program subsidizing disability medical services, has not yet been a factor in financing of AIDS treatment. Although AIDS is considered a disability, the two-year waiting period for medical coverage under Medicare, and the 18-month average life expectancy of AIDS patients, results in *de facto* restrictions on coverage through that federal program. There are currently no plans to waive the two-year waiting period for Medicare coverage. (48) Another gap in financing of health care arises from restrictions on coverage of nontraditional therapies. Even in cases in which "modern medicine" has a cure for an illness, increasingly in the past 20 years or so Americans have turned to alternative forms of care for a variety of health problems. With AIDS, for which there is no known cure, seeking of alternative therapies, particularly among those who are educated, middle class patients who are aware of such alternatives, is relatively common. Such treatments have included, for example, acupuncture, biofeedback, and homeopathy. (8) Few health

insurance programs cover these treatment alternatives.

Coverage through private sector insurance is variable, and many companies have attempted to limit their risk by screening out applicants who may be "at risk", limiting coverage for pre-existing conditions which may be related to HIV/AIDS, and limiting coverage for treatment related to "experimental therapies" (which necessarily includes most AIDS treatment procedures). In an effort to ensure that private insurance companies maintain equitable coverage related to HIV/AIDS, most states have developed and implemented some form of policy designed to protect the benefits of HIV/AIDS patients. (49) However, at least two states (Alabama and Wyoming) have no such policies (see Table 9).

F. Social and Economic Cost Implications of HIV and AIDS

The Human Immunodeficiency Virus and the disease that results from it have been seen as a metaphor for the social and economic disadvantages of minority and low-income Americans, and in particular with regard to their access to the benefits of our technologically advanced health care system.

Minorities are over-represented among

diagnosed AIDS cases, and in findings of seroprevalence studies, but have less economic access to the health care system through either public or private insurance. Moreover, because minorities are significantly underrepresented in the health care professions, particularly among physicians and intensive care nurses, they are much less likely to receive care from someone familiar with their racial/ethnic culture. For example, in 1985, only 3 percent of total active physicians were Black and 4 percent of the total registered nurse population was Black in 1984. (50)

While their over-representation in the epidemiology of the health problem has been known since the outset, only recently has there been any attention to targeting prevention at minority populations. Yet prevention is now the only known means of controlling the epidemic. Significant increases in funding of prevention programs targeted toward minority populations would demonstrate—through resource allocation decisions—a commitment to preventing transmission of the virus among the populations most severely affected.

It should be recognized in this context that minorities are predominant in the IV drug

abuser transmission category and among sexual partners of IV drug users, including prostitutes. These are, unquestionably, the most difficult populations for whom effective prevention efforts can be devised. This can be borne out by the fact that more than 20 years after the War on Drugs was initiated by President Nixon, there has been an increase, rather than a decrease in the estimated number of IV drug users. The estimate most commonly used in the late 1960s was 500,000 (although the genesis of this estimate was never specifically identified); the National Institute on Drug Abuse (NIDA) reported to the Presidential Commission on HIV that their current estimate is that 1.2 to 1.3 million Americans are intravenous drug abusers. (31) Recent studies (including Bowser) suggest that crack, even though not used intravenously, poses an important risk because of its potential to promote high risk sexual behavior. (51)

The overall economic implications of HIV infection are staggering. The estimated cost of providing health care to persons with AIDS (not including persons with ARC) is \$8.5 billion in 1991, a \$7.5 billion increase over 1985. The total costs to the U.S. economy (measured in terms of health care costs, lost income, decreased

consumption, and insurance payouts) are estimated to reach \$66.5 billion in 1991 alone (versus the estimated \$8.7 billion in 1986). (31) (These estimates assumed a cumulative 173,000 cases of AIDS by 1991.) In view of the fact that minorities and low income group members are much more dependent on the public health care system than are Whites and middle and upper income Americans, the burden clearly falls on the families of such individuals and on the public health system, which can ill-afford to bear such a burden.

HIV infection is a disease for which there is no known cure and only very limited (and expensive) experimental treatment (such as azidothymidine, or AZT). There is no vaccine to prevent contracting the virus or developing the illness, and experts now predict that one is not likely to be available for non-experimental use for 10 years or more. Because of this disproportionate impact on the minority and low income populations in the U.S., HIV infection must continue to be a high priority among health professionals concerned with those populations through the end of this century.

Table 1

Acquired immunodeficiency syndrome (AIDS) cases, by age, sex, and race/ethnicity: United States, 1982–1988

Age, sex, and race/ethnicity	Number, by year of report								Percent distribution	Cases per 100,000 population ³
	All years ^{1,2}	1982	1983	1984	1985	1986	1987	1988 ²		
									All years ^{1,2}	12 months ending November 30, 1988
Total ⁴	77,883	664	2,073	4,449	8,233	13,174	21,123	27,975	—	12.61
Male										
All males, 13 years and over ⁴	70,239	603	1,898	4,122	7,581	12,025	19,136	24,688	100.0	28.56
White, not Hispanic	43,696	345	1,141	2,610	4,846	7,577	12,377	14,680	62.2	21.42
Black, not Hispanic	16,950	173	475	945	1,722	2,757	4,316	6,521	24.1	67.85
Hispanic	8,944	83	268	536	961	1,584	2,242	3,246	12.7	52.34
13–19 years	245	2	5	17	29	42	71	79	0.3	0.70
20–29 years	14,231	145	394	847	1,493	2,496	3,843	4,979	20.3	26.09
30–39 years	32,963	279	886	1,988	3,636	5,681	8,885	11,512	46.9	63.18
40–49 years	15,518	128	437	898	1,661	2,558	4,290	5,504	22.1	42.33
50–59 years	5,366	44	150	307	602	924	1,467	1,858	7.6	19.98
60 years and over	1,916	5	26	65	160	324	580	756	2.7	4.85
Female										
All females, 13 years and over ⁴	6,423	48	141	277	523	963	1,668	2,797	100.0	3.00
White, not Hispanic	1,856	9	34	79	141	271	545	776	28.9	1.07
Black, not Hispanic	3,467	32	66	141	283	520	883	1,540	54.0	14.00
Hispanic	1,034	7	37	57	94	160	228	449	16.1	7.03
13–19 years	54	—	3	4	4	11	10	22	0.8	0.20
20–29 years	1,825	19	58	94	175	275	476	725	28.4	3.90
30–39 years	3,022	19	50	130	233	448	745	1,394	47.0	7.57
40–49 years	813	7	14	25	49	129	227	362	12.7	2.70
50–59 years	313	3	11	7	26	46	89	131	4.9	1.25
60 years and over	396	—	5	17	36	54	121	163	6.2	0.78
Children										
All children, under 13 years ⁴	1,221	13	34	50	129	186	319	490	100.0	1.17
White, not Hispanic	294	5	6	10	25	42	81	125	24.1	0.43
Black, not Hispanic	675	5	22	29	86	106	162	265	55.3	4.08
Hispanic	242	3	6	11	18	37	73	94	19.8	2.19
Under 5 years	1,063	12	33	47	119	166	278	408	87.1	2.41
5–12 years	158	1	1	3	10	20	41	82	12.9	0.31

¹ Includes cases prior to 1982.² Data are as of November 30, 1988, and reflect reporting delays.³ Resident population as of mid-1988, based on extrapolation from 1980–85 data from the U.S. Bureau of the Census.⁴ Includes all other races not shown separately.

Notes: The AIDS case definition was changed in September 1987 to allow for the presumptive diagnosis of AIDS-associated diseases and conditions and to expand the spectrum of human immunodeficiency virus-associated diseases reportable as AIDS. Excludes residents of U.S. territories.

Data are based on reporting by State health departments.

—Not available.

Source: National Center for Health Statistics: Health, United States, 1988. Department of Health and Human Services Pub. No. (PHS) 89–1232. Public Health Service. Washington. U.S. Government Printing Office, Mar 1989, Table 40, p. 82.

Table 2

Adult and pediatric AIDS cases, by transmission category, race/ethnic group, and sex, 1981-1988

Category	Total	Homo- sexual/ bisex- ual	IVDU*	Homo- sexual and IVDU	Percentage						NIR**
					Heterosexual contact		Trans- fusion recipi- ent	Coagu- lation disor- der	Other risk factor		
					Sex with IVDU	Sex with per- son at risk (non- IVDU)					
White											
Adult											
Male	45,359	81	5	8	<1	<1	2	1	<1	2	
Female	1,948	—	40	—	12	13	26	1	<1	8	
Pediatric	321	—	22 ¹	—	10 ²	8 ³	29	19	9	3	
Black											
Adult											
Male	17,618	45	34	8	1	<1	1	<1	5	4	
Female	3,604	—	58	—	17	5	4	<1	8	7	
Pediatric	707	—	47 ¹	—	15 ²	4 ³	5	1	23	5	
Hispanic											
Adult											
Male	10,773	48	37	8	<1	<1	1	1	<1	5	
Female	1,360	—	54	—	29	5	5	<1	<1	7	
Pediatric	308	—	50 ¹	—	21 ²	4 ³	11	4	6	4	
Asian/Pacific Islander											
Adult											
Male	440	82	2	2	<1	<1	6	2	<1	6	
Female	42	—	19	—	10	19	36	<1	<1	17	
Pediatric	6 ⁴	—	—	—	—	—	—	—	—	—	
American Indian/Alaskan Native											
Adult											
Male	75	61	9	17	<1	<1	1	4	<1	7	
Female	12 ⁴	—	—	—	—	—	—	—	—	—	
Pediatric	2 ⁴	—	—	—	—	—	—	—	—	—	

*IVDU = Intravenous drug user.

**NIR = no identified risk.

¹ Mother with history of intravenous drug use.² Mother with history of sex with IVDU.³ Mother with history of sex with person at risk for HIV (other than IVDU).⁴ Small numbers make calculations of percentages of limited value.

Source: Centers for Disease Control. "AIDS and Human Immunodeficiency Virus Infection in the United States: 1988 Update." Morbidity and Mortality Weekly Report, May 12, 1989, Vol. 38, No. S-4, Table 3, p. 19.

Table 3

Racial/ethnic distribution of the U.S. population overall compared with the racial/ethnic distribution of AIDS cases, 1981-1988*

Category	Racial/ethnic group (percent)					Total
	White	Black	Hispanic	Asian/ Pacific Islander	Ameri- can Indian/ Alaskan Native	
U.S. population	80	12	6	2	1	100
All AIDS cases	59	27	13	1	<1	100
Adult AIDS cases						
Male	62	24	13	1	<1	100
Female	29	54	16	1	<1	100
Pediatric cases	25	55	20	<1	<1	100

*Excluding U.S. territories.

Source: Centers for Disease Control. AIDS and Human Immunodeficiency Virus Infection in the United States: 1988 Update. Morbidity and Mortality Weekly Report, May 12, 1989, Vol. 38, No. S-4, Table 2, p. 18.

Table 4

Acquired immunodeficiency syndrome (AIDS) cases, by race/ethnicity, sex, and transmission category for persons 13 years of age and over: United States, 1982-1988

Race/ethnicity, sex, and transmission category	Number, by year of report								Percent distribution			
	All years ^{1, 2}	1982	1983	1984	1985	1986	1987	1988 ²	All years ^{1, 2}	1984	1986	1988 ²
Total ³	76,662	651	2,039	4,399	8,104	12,988	20,804	27,485	100.0	100.0	100.0	100.0
Male homosexual/ bisexual	48,198	394	1,267	2,869	5,443	8,541	13,501	16,033	62.9	65.2	65.8	58.3
Intravenous drug use	14,542	121	368	773	1,392	2,222	3,502	6,142	19.0	17.6	17.1	22.4
Male homosexual/ bisexual and intravenous drug use	5,421	56	199	408	589	972	1,505	1,680	7.1	9.3	7.5	6.1
Hemophilia/ coagulation disorder	744	7	12	35	74	125	218	273	1.0	0.8	1.0	1.0
Born in Caribbean/ African countries	1,226	45	84	110	143	217	266	356	1.6	2.5	1.7	1.3
Heterosexual ⁴	2,123	7	23	57	129	333	594	979	2.8	1.3	2.6	3.6
Sexual contact with intravenous drug user	1,505	6	15	43	97	224	398	721	2.0	1.0	1.7	2.6
Transfusion	1,937	6	26	53	165	300	621	766	2.5	1.2	2.3	2.8
Undetermined ⁵	2,471	15	60	94	169	278	597	1,256	3.2	2.1	2.1	4.6
Race/ethnicity												
White, not Hispanic	45,552	354	1,175	2,689	4,987	7,848	12,922	15,456	100.0	100.0	100.0	100.0
Male homosexual/ bisexual	35,451	279	929	2,162	4,083	6,253	10,033	11,603	77.8	80.4	79.7	75.1
Intravenous drug use	3,041	31	71	145	251	406	816	1,317	6.7	5.4	5.2	8.5
Male homosexual/ bisexual and intravenous drug use	3,388	25	124	265	376	646	971	974	7.4	9.9	8.2	6.3
Hemophilia/ coagulation disorder	631	7	11	25	63	113	187	225	1.4	0.9	1.4	1.5
Born in Caribbean/ African countries	5	—	—	1	1	1	1	1	0.0	0.0	0.0	0.0
Heterosexual ⁴	647	1	2	16	31	93	196	308	1.4	0.6	1.2	2.0
Sexual contact with intravenous drug user	349	1	—	9	16	39	99	185	0.8	0.3	0.5	1.2
Transfusion	1,446	5	21	40	127	232	469	552	3.2	1.5	3.0	3.6
Undetermined ⁵	943	6	17	35	55	104	249	476	2.1	1.3	1.3	3.1
Black, not Hispanic	20,417	205	541	1,086	2,005	3,277	5,199	8,061	100.0	100.0	100.0	100.0
Male homosexual/ bisexual	7,616	77	192	399	794	1,321	2,083	2,727	37.3	36.7	40.3	33.8
Intravenous drug use	7,796	55	180	404	747	1,191	1,853	3,355	38.2	37.2	36.3	41.6

Table 4

Acquired immunodeficiency syndrome (AIDS) cases, by race-ethnicity, sex, and transmission category for persons 13 years of age and over: United States, 1982-1988 Continued

Race/ethnicity, sex, and transmission category	Number, by year of report								Percent distribution			
	All years ^{1, 2}	1982	1983	1984	1985	1986	1987	1988 ²	All years ^{1, 2}	1984	1986	1988 ²
Male homosexual/ bisexual and intravenous drug use	1,416	17	44	94	142	228	380	507	6.9	8.7	7.0	6.3
Hemophilia/ coagulation disorder	50	—	—	5	4	5	12	24	0.2	0.5	0.2	0.3
Born in Caribbean/ African countries	1,210	44	83	109	142	214	262	351	5.9	10.0	6.5	4.4
Heterosexual ⁴	1,038	4	11	23	73	160	293	474	5.1	2.1	4.9	5.9
Sexual contact with intravenous drug user	799	4	6	18	59	116	223	373	3.9	1.7	3.5	4.6
Transfusion	313	—	2	10	27	44	92	138	1.5	0.9	1.3	1.7
Undetermined ⁵	978	8	29	42	76	114	224	485	4.8	3.9	3.5	6.0
Hispanic	9,978	90	305	593	1,055	1,744	2,470	3,695	100.0	100.0	100.0	100.0
Male homosexual/ bisexual	4,643	37	137	286	526	882	1,235	1,523	46.5	48.2	50.6	41.2
Intravenous drug use	3,639	34	113	222	386	613	822	1,443	36.5	37.4	35.2	39.1
Male homosexual/ bisexual and intravenous drug use	589	14	29	47	69	95	140	194	5.9	7.9	5.5	5.3
Hemophilia/ coagulation disorder	49	—	1	4	7	5	12	20	0.5	0.7	0.3	0.5
Born in Caribbean/ African countries	8	1	1	—	—	1	3	2	0.1	—	0.1	0.1
Heterosexual ⁴	419	2	10	18	25	77	102	184	4.2	3.0	4.4	5.0
Sexual contact with intravenous drug user	349	1	9	16	22	69	75	156	3.5	2.7	4.0	4.2
Transfusion	132	1	2	2	7	19	42	59	1.3	0.3	1.1	1.6
Undetermined ⁵	499	1	12	14	35	52	114	270	5.0	2.4	3.0	7.3
Sex												
Male	70,239	603	1,898	4,122	7,581	12,025	19,136	24,688	100.0	100.0	100.0	100.0
Homosexual/bisexual	48,198	394	1,267	2,869	5,443	8,541	13,501	16,033	68.6	69.6	71.0	64.9
Intravenous drug use	11,228	98	288	606	1,113	1,748	2,678	4,680	16.0	14.7	14.5	19.0
Homosexual/bisexual and intravenous drug use	5,421	56	199	408	589	972	1,505	1,680	7.7	9.9	8.1	6.8
Hemophilia/ coagulation disorder	724	7	12	33	71	120	214	267	1.0	0.8	1.0	1.1
Born in Caribbean/ African countries	925	36	72	93	113	162	193	251	1.3	2.3	1.4	1.0
Heterosexual ⁴	516	—	2	12	22	61	146	273	0.7	0.3	0.5	1.1

Table 4

Acquired immunodeficiency syndrome (AIDS) cases, by race-ethnicity, sex, and transmission category for persons 13 years of age and over: United States, 1982-1988—Continued

Race/ethnicity, sex, and transmission category	Number, by year of report								Percent distribution			
	All years ^{1, 2}	1982	1983	1984	1985	1986	1987	1988 ²	All years ^{1, 2}	1984	1986	1988 ²
Sexual contact with intravenous drug user	375	—	1	11	21	41	105	196	0.5	0.3	0.3	0.8
Transfusion	1,236	2	16	30	107	200	410	471	1.8	0.7	1.7	1.9
Undetermined ⁵	1,991	10	42	71	123	221	489	1,033	2.8	1.7	1.8	4.2
Female	6,423	48	141	277	523	963	1,668	2,797	100.0	100.0	100.0	100.0
Intravenous drug use	3,314	23	80	167	279	474	824	1,462	51.6	60.3	49.2	52.3
Hemophilia/ coagulation disorder	20	—	—	2	3	5	4	6	0.3	0.7	0.5	0.2
Born in Caribbean/ African countries	301	9	12	17	30	55	73	105	4.7	6.1	5.7	3.8
Heterosexual ⁴	1,607	7	21	45	107	272	448	706	25.0	16.2	28.2	25.2
Sexual contact with intravenous drug user	1,130	6	14	32	76	183	293	525	17.6	11.6	19.0	18.8
Transfusion	701	4	10	23	58	100	211	295	10.9	8.3	10.4	10.6
Undetermined ⁵	480	5	18	23	46	57	108	223	7.5	8.3	5.9	8.0

¹ Includes cases prior to 1982.

² Data are as of November 30, 1988 and reflect reporting delays.

³ Includes all other races not shown separately.

⁴ Includes persons who have had heterosexual contact with a person with human immunodeficiency virus (HIV) infection or at risk of HIV infection.

⁵ Includes persons for whom risk information is incomplete (because of death, refusal to be interviewed, or loss to followup), persons still under investigation, men reported only to have had heterosexual contact with prostitutes, and interviewed persons for whom no specific risk is identified.

Notes: The AIDS case definition was changed in September 1987 to allow for the presumptive diagnosis of AIDS-associated diseases and conditions and to expand the spectrum of human immunodeficiency virus-associated diseases reportable as AIDS. Excludes residents of U.S. territories.

Data are based on reporting by State health departments.

—Not available.

Source: National Center for Health Statistics: Health, United States, 1988. Department of Health and Human Services Pub. No. (PHS) 89-1232. Public Health Service. Washington. U.S. Government Printing Office, Mar 1989, Table 42, pp. 84-85.

Table 5

Cumulative incidence* and relative risk** of AIDS, by racial/ethnic group, exposure category, and geographic region

Exposure Category	U.S. Region	White		Black		Hispanic		Other	
		CI	RR	CI	RR	CI	RR	CI	RR
Exclusively homosexual men without IVDA***	Northeast	376.8	1.0	893.2	2.4 (2.2, 2.6)	1,242.2	3.3 (3.0, 3.6)	152.5	0.4 (0.3, 0.6)
	Midwest	88.9	1.0	217.7	2.4 (2.1, 2.8)	180.6	2.0 (1.5, 2.7)	34.6	0.4 (0.2, 0.9)
	South	255.2	1.0	248.8	1.0 (0.9, 1.1)	390.4	1.5 (1.4, 1.7)	35.2	0.1 (0.1, 0.3)
	West	657.5	1.0	747.2	1.1 (1.0, 1.3)	400.8	0.6 (0.6, 0.7)	126.3	0.2 (0.2, 0.2)
Bisexual men with IVDA	Northeast	49.3	1.0	341.4	6.9 (6.0, 8.0)	283.0	5.7 (4.7, 7.0)	37.3	0.8 (0.3, 1.7)
	Midwest	21.5	1.0	114.1	5.3 (4.3, 6.7)	57.9	2.7 (1.6, 4.6)	11.5	0.5 (0.1, 2.4)
	South	43.4	1.0	115.9	2.7 (2.3, 3.1)	65.4	1.5 (1.1, 2.0)	8.8	0.2 (0.0, 0.9)
	West	86.6	1.0	245.3	2.8 (2.3, 3.5)	100.4	1.2 (1.0, 1.4)	33.7	0.4 (0.3, 0.6)
Heterosexual adults with IVDA	Northeast	36.8	1.0	951.3	25.9 (23.7, 28.2)	1,128.8	30.7 (27.9, 33.7)	15.0	0.4 (0.2, 1.0)
	Midwest	2.1	1.0	43.5	20.6 (14.6, 29.0)	47.8	22.6 (13.8, 37.0)	3.8	1.8 (0.3, 11.2)
	South	6.0	1.0	92.4	15.4 (12.9, 18.5)	20.0	3.4 (2.3, 4.8)	2.8	0.5 (0.1, 3.0)
	West	7.3	1.0	82.5	11.3 (8.5, 15.2)	23.6	3.2 (2.4, 4.5)	2.3	0.3 (0.1, 1.0)
Adults with undetermined means of acquiring HIV infection	Northeast	5.5	1.0	78.7	14.3 (11.2, 18.3)	91.6	16.7 (12.6, 22.0)	13.3	2.4 (1.0, 6.1)
	Midwest	1.9	1.0	9.1	4.9 (2.9, 8.3)	10.8	5.8 (2.3, 14.3)	1.9	1.0 (0.1, 13.4)
	South	4.5	1.0	24.7	5.5 (4.3, 7.1)	15.8	3.5 (2.4, 5.3)	7.1	1.6 (0.5, 5.1)
	West	6.0	1.0	45.5	7.6 (5.3, 10.9)	15.2	2.5 (1.7, 3.7)	2.3	0.4 (0.1, 1.2)
All AIDS patients (including children)	Northeast	218.4	1.0	1,445.9	6.6 (6.3, 6.9)	1,538.8	7.0 (6.7, 7.4)	100.0	0.5 (0.3, 0.6)
	Midwest	53.1	1.0	171.8	3.2 (2.9, 3.6)	138.6	2.6 (2.1, 3.2)	28.1	0.5 (0.3, 0.9)
	South	143.9	1.0	286.7	2.0 (1.9, 2.1)	206.3	1.4 (1.3, 1.6)	31.4	0.2 (0.1, 0.3)
	West	351.0	1.0	560.9	1.6 (1.5, 1.7)	227.5	0.6 (0.6, 0.7)	71.5	0.2 (0.2, 0.2)

* Cumulative incidence (CI): AIDS cases reported from June 1, 1981, to January 18, 1988, per million population.

** Reference group for relative risk (RR): non-Hispanic Whites (99% confidence interval around RR is in parentheses).

*** History of intravenous drug abuse.

Source: Richard M. Selik, Kenneth G. Castro, and Marguerite Pappaioanou, "Racial/Ethnic Differences in the Risk of AIDS in the United States." American Journal of Public Health, 1988, Vol. 78, No. 12, Table 16, p. 1542.

Table 6

Acquired immunodeficiency syndrome (AIDS) deaths, by age, sex, and race/ethnicity: United States, 1982-1988

Age, sex, and race/ethnicity	Number, by year of death								Percent distribution
	All years ^{1, 2}	1982	1983	1984	1985	1986	1987	1988 ²	All years ^{1, 2}
Total ³	43,790	431	1,402	3,122	6,010	10,010	12,843	9,657	—
Male									
All males, 13 years and over ³	39,551	384	1,271	2,849	5,510	9,107	11,514	8,651	100.0
White, not Hispanic	24,408	197	716	1,751	3,456	5,765	7,031	5,354	61.7
Black, not Hispanic	9,957	121	368	691	1,331	2,123	2,936	2,294	25.2
Hispanic	4,861	65	177	380	686	1,154	1,448	920	12.3
13-19 years	129	—	3	12	23	30	35	25	0.3
20-29 years	7,712	73	266	563	1,067	1,769	2,222	1,700	19.5
30-39 years	18,001	187	579	1,300	2,518	4,167	5,247	3,874	45.5
40-49 years	8,915	79	297	646	1,224	2,053	2,584	1,974	22.5
50-59 years	3,409	38	112	257	510	763	958	749	8.6
60 years and over	1,385	7	14	71	168	325	468	329	3.5
Female									
All females, 13 years and over ³	3,542	36	102	228	404	767	1,099	870	100.0
White, not Hispanic	1,072	9	23	53	130	230	356	263	30.3
Black, not Hispanic	1,932	20	54	129	194	408	608	496	54.5
Hispanic	505	6	25	44	76	120	127	103	14.3
13-19 years	34	1	2	1	5	9	10	6	1.0
20-29 years	992	12	39	88	122	213	290	217	28.0
30-39 years	1,579	16	35	98	181	352	477	404	44.6
40-49 years	437	4	12	21	43	84	149	121	12.3
50-59 years	194	2	9	6	15	33	74	52	5.5
60 years and over	306	1	5	14	38	76	99	70	8.6
Children									
All children, under 13 years ³	697	11	29	45	96	136	230	136	100.0
White, not Hispanic	183	4	6	8	26	30	63	42	26.3
Black, not Hispanic	368	6	19	26	56	73	111	71	52.8
Hispanic	137	1	4	11	13	31	52	21	19.7
Under 5 years	618	10	28	43	87	117	202	117	88.7
5-12 years	79	1	1	2	9	19	28	19	11.3

¹ Includes deaths prior to 1982.² Data are as of November 30, 1988, and reflect reporting delays.³ Includes all other races not shown separately.

Notes: The AIDS case definition was changed in September 1987 to allow for the presumptive diagnosis of AIDS-associated diseases and conditions and to expand the spectrum of human immunodeficiency virus-associated diseases reportable as AIDS. Excludes residents of U.S. territories.

Data are based on reporting by State health departments.

—Not available.

Source: National Center for Health Statistics: Health, United States, 1988. Department of Health and Human Services Pub. No. (PHS)89-1232. Public Health Service. Washington. U.S. Government Printing Office, Mar 1989, Table 41, p. 83.

Table 7

Acquired immunodeficiency syndrome (AIDS) deaths, by race/ethnicity, sex, and transmission category for persons 13 years of age and over: United States, 1982–1988

Race/ethnicity, sex, and transmission category	Number, by year of death								Percent distribution			
	All years ^{1,2}	1982	1983	1984	1985	1986	1987	1988 ²	All years ^{1,2}	1984	1986	1988 ²
Total ³	43,093	420	1,373	3,077	5,914	9,874	12,613	9,521	100.0	100.0	100.0	100.0
Male homosexual/ bisexual	27,053	244	816	1,915	3,821	6,409	7,774	5,917	62.8	62.2	64.9	62.2
Intravenous drug use	7,947	82	275	588	1,067	1,684	2,419	1,759	18.4	19.1	17.1	18.5
Male homosexual/ bisexual and intravenous drug use	3,254	38	129	294	444	744	921	660	7.6	9.6	7.5	6.9
Hemophilia/coagulation disorder	452	6	6	24	70	96	140	109	1.1	0.8	1.0	1.1
Born in Caribbean/ African countries	676	29	72	74	99	123	160	98	1.6	2.4	1.3	1.0
Heterosexual ⁴	1,061	3	15	42	104	221	353	319	2.5	1.4	2.2	3.4
Sexual contact with intravenous drug user	728	3	9	35	71	151	243	214	1.7	1.1	1.5	2.3
Transfusion	1,349	3	19	64	169	320	446	324	3.1	2.1	3.2	3.4
Undetermined ⁵	1,301	15	41	76	140	277	400	335	3.0	2.5	2.8	3.5
Race/ethnicity												
White, not Hispanic	25,480	206	739	1,804	3,586	5,995	7,387	5,617	100.0	100.0	100.0	100.0
Male homosexual/ bisexual	19,676	159	573	1,409	2,840	4,709	5,594	4,288	77.2	78.1	78.6	76.3
Intravenous drug use	1,587	14	63	101	206	306	513	365	6.2	5.6	5.1	6.5
Male homosexual/ bisexual and intravenous drug use	1,986	14	73	184	278	480	569	376	7.8	10.2	8.0	6.7
Hemophilia/coagulation disorder	392	6	5	21	57	85	120	97	1.5	1.2	1.4	1.7
Born in Caribbean/ African countries	1	—	—	1	—	—	—	—	0.0	0.1	—	—
Heterosexual ⁴	312	1	2	5	27	70	98	109	1.2	0.3	1.2	1.9
Sexual contact with intravenous drug user	152	1	—	4	9	34	52	52	0.6	0.2	0.6	0.9
Transfusion	1,035	3	15	51	126	250	338	249	4.1	2.8	4.2	4.4
Undetermined ⁵	491	9	8	32	52	95	155	133	1.9	1.8	1.6	2.4
Black, not Hispanic	11,889	141	422	820	1,525	2,531	3,544	2,790	100.0	100.0	100.0	100.0
Male homosexual/ bisexual	4,551	54	148	287	585	1,013	1,352	1,074	38.3	35.0	40.0	38.5
Intravenous drug use	4,459	41	133	321	584	950	1,338	1,052	37.5	39.2	37.5	37.7
Male homosexual/ bisexual and intravenous drug use	889	11	38	72	115	182	252	211	7.5	8.8	7.2	7.6

Table 7

Acquired immunodeficiency syndrome (AIDS) deaths, by race/ethnicity, sex, and transmission category for persons 13 years of age and over: United States, 1982-1988—Continued

Race/ethnicity, sex, and transmission category	Number, by year of death								Percent distribution			
	All years ^{1,2}	1982	1983	1984	1985	1986	1987	1988 ²	All years ^{1,2}	1984	1986	1988 ²
Hemophilia/coagulation disorder	29	—	—	1	6	3	12	7	0.2	0.1	0.1	0.3
Born in Caribbean/African countries	671	29	72	73	98	122	158	98	5.6	8.9	4.8	3.5
Heterosexual ⁴	558	1	8	24	53	97	206	165	4.7	2.9	3.8	5.9
Sexual contact with intravenous drug user	419	1	5	19	42	72	153	125	3.5	2.3	2.8	4.5
Transfusion	195	—	1	10	27	39	70	48	1.6	1.2	1.5	1.7
Undetermined ⁵	537	5	22	32	57	125	156	135	4.5	3.9	4.9	4.8
Hispanic	5,366	71	202	424	762	1,274	1,575	1,023	100.0	100.0	100.0	100.0
Male homosexual/bisexual	2,580	30	89	198	372	641	752	485	48.1	46.7	50.3	47.4
Intravenous drug use	1,875	26	77	163	272	422	563	338	34.9	38.4	33.1	33.0
Male homosexual/bisexual and intravenous drug use	361	13	17	37	49	77	95	69	6.7	8.7	6.0	6.7
Hemophilia/coagulation disorder	27	—	1	2	5	8	6	5	0.5	0.5	0.6	0.5
Born in Caribbean/African countries	4	—	—	—	1	1	2	—	0.1	—	0.1	—
Heterosexual ⁴	186	1	5	13	24	52	48	43	3.5	3.1	4.1	4.2
Sexual contact with intravenous drug user	156	1	4	12	20	45	38	36	2.9	2.8	3.5	3.5
Transfusion	85	—	2	2	10	23	25	23	1.6	0.5	1.8	2.3
Undetermined ⁵	248	1	11	9	29	50	84	60	4.6	2.1	3.9	5.9
Sex												
Male	39,551	384	1,271	2,849	5,510	9,107	11,514	8,651	100.0	100.0	100.0	100.0
Homosexual/bisexual	27,053	244	816	1,915	3,821	6,409	7,774	5,917	68.4	67.2	70.4	68.4
Intravenous drug use	6,152	62	219	451	854	1,306	1,877	1,330	15.6	15.8	14.3	15.4
Homosexual/bisexual and intravenous drug use	3,254	38	129	294	444	744	921	660	8.2	10.3	8.2	7.6
Hemophilia/coagulation disorder	440	6	6	23	66	93	139	106	1.1	0.8	1.0	1.2
Born in Caribbean/African countries	509	23	64	57	83	83	115	69	1.3	2.0	0.9	0.8
Heterosexual ⁴	250	—	1	7	22	41	84	93	0.6	0.2	0.5	1.1
Sexual contact with intravenous drug user	184	—	—	7	19	30	58	69	0.5	0.3	0.3	0.8
Transfusion	859	1	8	43	110	222	272	202	2.2	1.5	2.4	2.3
Undetermined ⁵	1,034	10	28	59	110	209	332	274	2.6	2.1	2.3	3.2
Female	3,542	36	102	228	404	767	1,099	870	100.0	100.0	100.0	100.0
Intravenous drug use	1,795	20	56	137	213	378	542	429	50.7	60.1	49.3	49.3

Table 7

Acquired immunodeficiency syndrome (AIDS) deaths, by race/ethnicity, sex, and transmission category for persons 13 years of age and over: United States, 1982–1988—Continued

Race/ethnicity, sex, and transmission category	Number, by year of death								Percent distribution			
	All years ^{1,2}	1982	1983	1984	1985	1986	1987	1988 ²	All years ^{1,2}	1984	1986	1988 ²
Hemophilia/coagulation disorder	12	—	—	1	4	3	1	3	0.3	0.4	0.4	0.3
Born in Caribbean/ African countries	167	6	8	17	16	40	45	29	4.7	7.5	5.2	3.3
Heterosexual ⁴	811	3	14	35	82	180	269	226	22.9	15.4	23.5	26.0
Sexual contact with intravenous drug user	544	3	9	28	52	121	185	145	15.4	12.3	15.8	16.7
Transfusion	490	2	11	21	59	98	174	122	13.8	9.2	12.8	14.0
Undetermined ⁵	267	5	13	17	30	68	68	61	7.5	7.5	8.9	7.0

¹ Includes deaths prior to 1982.

² Data are as of November 30, 1988, and reflect reporting delays.

³ Includes all other races not shown separately.

⁴ Includes persons who have had heterosexual contact with a person with human immunodeficiency virus (HIV) infection or at risk of HIV infection.

⁵ Includes persons for whom risk information is incomplete (because of death, refusal to be interviewed, or loss to followup), persons still under investigation, men reported only to have had heterosexual contact with prostitutes, and interviewed persons for whom no specific risk is identified.

Notes: The AIDS case definition was changed in September 1987 to allow for the presumptive diagnosis of AIDS-associated diseases and conditions and to expand the spectrum of human immunodeficiency virus-associated diseases reportable as AIDS. Excludes residents of U.S. territories.

Data are based on reporting by State health departments.

—Not available.

Source: National Center for Health Statistics: Health, United States, 1988. Department of Health and Human Services Pub. No. (PHS) 89–1232. Public Health Service. Washington. U.S. Government Printing Office, Mar 1989, Table 43, pp. 86–87.

Table 8

Services provided to people with acquired immunodeficiency syndrome under Medicaid, by State: 1987-88

State	Reimbursement for AZT ¹	Hospice services covered	Home care waiver applied for	Increasing reimbursement for nursing home services	Unlimited inpatient days covered
	(1)	(2)	(3)	(4)	(5)
Alabama	No	No	No	No	No
Alaska	Yes	No	No	No	Yes
Arizona	Yes	No	No	Yes	Yes
Arkansas	No	No	No	No	Yes
California	Yes	UR	Yes	No	Yes
Colorado	No	NA	No	No	Yes
Connecticut	Yes	Yes	No	No	Yes
Delaware	Yes	Yes	No	No	Yes
District of Columbia	Yes	No	No	NA	Yes
Florida	Yes	Yes	No	Yes	No
Georgia	Yes	No	No	No	Yes
Hawaii	Yes	No	Yes	No	Yes
Idaho	Yes	No	No	No	No
Illinois	Yes	UR	No	No	Yes
Indiana	Yes	No	No	No	Yes
Iowa	Yes	No	No	NA	Yes
Kansas	Yes	Yes	No	No	Yes
Kentucky	Yes	Yes	No	Yes	No
Louisiana	Yes	No	No	No	Yes
Maine	Yes	No	No	NA	Yes
Maryland	Yes	No	No	Yes	Yes
Massachusetts	Yes	UR	No	No	Yes
Michigan	Yes	Yes	No	No	Yes
Minnesota	Yes	Yes	NA	NA	NA
Mississippi	Yes	No	No	No	No
Missouri	Yes	No	No	No	Yes
Montana	Yes	No	No	NA	Yes
Nebraska	Yes	No	No	No	Yes

Table 4

Services provided to people with acquired immunodeficiency syndrome under Medicaid, by State:
1987-88—Continued

State	Reimbursement for AZT ¹	Hospice services covered	Home care waiver applied for	Increasing reimbursement for nursing home services	Unlimited inpatient days covered
	(1)	(2)	(3)	(4)	(5)
Nevada	Yes	No	No	No	Yes
New Hampshire	Yes	UR	No	No	Yes
New Jersey	Yes	UR	Yes	Yes	Yes
New Mexico	Yes	Yes	Yes	No	Yes
New York	Yes	Yes	No	Yes	Yes
North Carolina	Yes	Yes	Yes	No	Yes
North Dakota	Yes	Yes	Yes	No	Yes
Ohio	Yes	Yes	Yes	Yes	Yes
Oklahoma	Yes	No	No	No	Yes
Oregon	Yes	No	No	Yes	No
Pennsylvania	Yes	No	No	No	Yes
Rhode Island	Yes	No	No	No	Yes
South Carolina	Yes	No	Yes	NA	Yes
South Dakota	Yes	Yes	No	Yes	Yes
Tennessee	Yes	Yes	No	No	No
Texas	Yes	No	No	No	No
Utah	Yes	No	No	No	Yes
Vermont	Yes	Yes	No	No	No
Virginia	Yes	No	No	No	Yes
Washington	Yes	No	No	Yes	Yes
West Virginia	Yes	No	No	No	No
Wisconsin	Yes	No	No	Yes	Yes
Wyoming	Yes	No	No	Yes	Yes

¹ Currently, only Alabama does not reimburse for azidothymidine.

NOTES: NA is not available. UR is under review.

Source: Anthony Pascal, Marilyn Cvitanic, Charles Bennett, Michael Gorman, and Carl A. Serrato, "State Policies and the Financing of Acquired Immunodeficiency Syndrome Care," Health Care Financing Review, Fall 1989, Vol. 11, No. 1, Table 3, p. 96.

Table 9

State policies protecting the benefits of human immunodeficiency virus and acquired immunodeficiency syndrome (HIV/AIDS) patients, by State: 1987-1988

State	Provides extended COBRA* protection	Insurers cannot use HIV/AIDS to exclude preexisting conditions	Insurers cannot cap specific diseases	Insurers cannot question about HIV test	Insurers cannot deny on basis of sex preference	Provides risk pool applicable to AIDS/HIV patients
Alabama	No	No	No	No	No	NA
Alaska	No	No	Yes	No	No	No
Arizona	Yes	No	No	No	Yes	NA
Arkansas	Yes	Yes	No	No	No	NA
California	Yes	Yes	Yes	Yes	Yes	No
Colorado	Yes	No	Yes	No	Yes	No
Connecticut	Yes	No	No	No	No	NA
Delaware	No	Yes	Yes	No	Yes	No
District of Columbia	NA	Yes	NA	Yes	Yes	NA
Florida	NA	Yes	Yes	No	Yes	NA
Georgia	Yes	Yes	Yes	No	Yes	No
Hawaii	Yes	No	NA	No	No	NA
Idaho	No	Yes	Yes	No	No	No
Illinois	Yes	No	No	No	Yes	NA
Indiana	No	No	Yes	No	No	Yes
Iowa	Yes	Yes	No	No	Yes	NA
Kansas	Yes	Yes	Yes	No	Yes	No
Kentucky	Yes	No	No	No	No	No
Louisiana	No	No	Yes	No	No	No
Maine	Yes	No	NA	Yes	No	NA
Maryland	Yes	Yes	No	No	Yes	NA
Massachusetts	Yes	No	Yes	Yes	Yes	NA
Michigan	NA	Yes	NA	Yes	Yes	NA
Minnesota	Yes	Yes	No	No	Yes	Yes
Mississippi	NA	NA	NA	No	No	No
Missouri	No	NA	No	No	No	NA
Montana	NA	Yes	Yes	No	Yes	NA
Nebraska	Yes	No	NA	No	No	NA
Nevada	NA	No	No	No	Yes	No
New Hampshire	Yes	No	Yes	No	No	No
New Jersey	No	No	Yes	Yes	Yes	NA
New Mexico	Yes	No	No	No	No	Yes
New York	No	No	Yes	Yes	No	No
North Carolina	Yes	Yes	Yes	No	No	NA
North Dakota	Yes	No	Yes	No	Yes	Yes
Ohio	Yes	No	No	Yes	No	No
Oklahoma	Yes	No	No	No	No	No
Oregon	Yes	No	No	No	Yes	NA
Pennsylvania	Yes	Yes	Yes	No	Yes	No
Rhode Island	Yes	No	Yes	No	No	NA
South Carolina	NA	NA	No	No	No	Yes
South Dakota	NA	Yes	NA	No	Yes	NA
Tennessee	Yes	Yes	No	No	Yes	NA
Texas	NA	No	Yes	No	No	NA
Utah	Yes	No	Yes	No	No	No
Vermont	Yes	No	No	No	No	NA
Virginia	Yes	No	Yes	No	No	No
Washington	Yes	No	No	No	No	NA
West Virginia	Yes	No	Yes	No	No	NA
Wisconsin	NA	No	Yes	Yes	Yes	NA
Wyoming	No	No	No	No	No	NA

*COBRA is Consolidated Omnibus Budget Reconciliation Act of 1986.

NA—not available.

Source: Anthony Pascal, Marilyn Cvitanic, Charles Bennett, Michael Gorman, and Carl A. Serrato, "Acquired Immunodeficiency Syndrome Care." Health Care Financing Review. Fall 1989, Vol. 11, No. 1, Tables 4 and 5, pp. 99-100.

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A. Introduction

1. Overview of Findings

Dental disease is rarely life threatening, but can be severely debilitating. Neglect of dental conditions may have potentially far-reaching consequences, including nutritional deficits, hospitalization (to treat, for example, systemic infection that began in the teeth), and lost workdays. Furthermore, dental disease can exact heavy financial costs, as well as psychological costs from disfigurement and other sequelae. However, most dental diseases are preventable.

Various data sets measuring dental health status evidence racial and ethnic differences, as well as differences according to income and educational level. Although the overall trend since the early 1970s has been a decline in tooth decay for all children, national data from the National Institute for Dental Research's 1987 Survey of the Oral Health of U.S. School Children suggest slightly higher average levels of tooth decay among children of racial minorities than among White children. Native American children surveyed in the Indian Health Service (IHS) dental clinics appear to have considerably higher levels of tooth decay than all U.S. children. Available data also suggest substantially higher unmet need for dental treatment among racial and ethnic minority children, including Black, American Indian, and Mexican American children. Black children show clear indications of having more periodontal disease than White children.

A recent survey of U.S. employed adults shows a pattern of less tooth decay but greater unmet need for care for employed Black Americans age 18 and older when compared to their White counterparts. The same survey shows higher prevalence and greater severity of periodontal conditions for Blacks and Hispanics compared to Whites. Another study suggested that adult Mexican Americans in the Southwestern United States have lower mean numbers of decayed, missing, and filled teeth than the general population of the western states.

At least some minority groups (i.e., Black Americans, Mexican Americans) appear to have marginally lower rates of edentulism (complete absence of permanent teeth) in middle age in comparison to Whites, but higher rates among those 65 and older. Edentulism prevalence is strongly influenced by both income and educational level; when income and education are held constant, the Black and White differential is minimal. However, when other measures of tooth loss, such as the pattern of loss, are evaluated, very real differences exist between Blacks and Whites in addition to effects of income and education.

With respect to utilization of dental health services, Whites show higher levels of utilization than do Blacks. Hispanic Americans have utilization levels between those for Whites and Blacks. There is also some evidence that Whites are more likely than Blacks to use dental

services for preventive purposes.

Utilization differentials between Blacks and Whites decreased quite sharply between 1964 and 1981, but have remained more or less stationary since 1981. Hispanic Americans have exhibited dramatic increases in utilization between 1976 and 1986. On the whole, utilization of dental health services increases with income and educational level.

Rates of private dental insurance coverage vary by race/ethnicity, income, and educational level. Whites are more likely to have private coverage than either Hispanic or Black Americans. Coverage rates increase with income and education. Although private dental coverage does not in itself appear to close the above-noted racial, income, or educational gaps in utilization rates, it does have a positive effect on utilization for all population groups. Medicaid assistance for low-income persons does not appear to boost utilization above what would be expected in the absence of assistance. This may be due to program controls on dental service coverage and limitations on eligibility for services. Eliminating barriers to care has been shown to be effective in improving dental health status. However, more information is needed about other social and economic factors that promote or inhibit use of dental care.

2. Data Sources and Their Limitations

Three major indicators of dental health status are the principal focus of this

chapter: 1) decayed, missing, and filled (DMF) teeth or dental surfaces; 2) periodontal disease; and 3) tooth loss and edentulism.

The DMF index is a commonly used composite score of decayed, missing, and filled teeth (DMFT) or decayed, missing, and filled dental surfaces (DMFS). Because a full set of teeth contains many more surfaces than individual teeth, DMFS scores are not interchangeable with DMFT scores. When used alone, the DMFT index indicates only the total number of teeth affected. When evaluated simultaneously, as in some studies, the DMFT and DMFS indices provide information about the total extent of dental tissue damage, as well as the number of teeth affected. In general, the scores can be taken as indicators of dental caries history, but other causes of tooth damage can contribute to an individual's score—especially causes, such as trauma, which affect the "missing" component of the index.

In either index, the categories for "decayed" and "missing" teeth/surfaces reflect morbidity, whereas "filled" teeth/surfaces reflect restorative care. The definition of filled teeth includes crowns that may have been used because of caries or trauma, or for cosmetic purposes. The three categories decayed, missing, and filled can be summed and viewed as an overall indicator of dental health status, but the index is commonly partitioned to show the proportion attributable to decay, and the proportion attributable to filling. From this

it is possible to estimate not only the degree of decay, but also the extent to which the need for restorative services has been met.

The second major indicator of dental health status is the prevalence of periodontal disease. Indicators of periodontal disease include gingivitis; periodontal pocketing and loss of attachment; and bone loss. Gingivitis is inflammation of the gums, manifested by red, swollen, or bleeding tissue. Periodontal pocketing is the deepening of the groove between gum tissue and the tooth in which the groove extends into the connective tissue surrounding the tooth root, and attachment loss is loss of support of the tooth by surrounding periodontal tissue. Bone loss is the process of resorption of the thin layer of bone surrounding and containing the teeth. (1) As periodontal disease worsens, it may progress from each of these conditions to the next.

There is no single index agreed upon by all dental health experts to measure periodontal disease. (2) The periodontal index (PI), developed in the 1950s, is based on pocket measurements. It combines mild conditions (e.g., gingivitis) and fullblown conditions (e.g., destructive disease) into a single numeric indicator, focusing upon the severity of the disease but ignoring its extent and distribution. Another composite index is the World Health Organization's Community Periodontal Index of Treatment Need, which is also based upon pocket measurements. (3)

Some dental experts believe that these indices, in relying solely on pocket measurements, may

underestimate the amount of destructive periodontal disease. (4) Researchers at the National Institute of Dental Research (NIDR) have recently developed measures that indicate both the extent and severity of destructive periodontal disease. (3) Recent NIDR data discussed in this chapter employ these types of measures.

Edentulism, the third major indicator of dental health status, is the complete absence of permanent teeth. Missing teeth among edentulous persons may have resulted from caries, trauma, or dental treatment of a healthy tooth because of other problems, such as those associated with orthodontia or periodontal disease. In some cases, the missing teeth result from a hereditary defect in which one or more permanent teeth fail to form.

Current data sets available for describing dental health status are compiled separately for either children or adults. In children, caries is usually the oral disease of greatest importance, whereas in adults, the focus shifts to periodontal disease and tooth loss, as well as restoration of root caries, maintenance of restored teeth, and oral pathology. After presenting dental health status indicators for children and adults, this chapter's discussion moves to racial/ethnic and income differentials in oral health knowledge and preventive behaviors, as well as in rates and patterns of dental service utilization.

Several current data sets used to measure dental health status possess limited generalizability to various population groups nationally. For example, the recent NIDR dental examination data on employed adults pertains only to people holding paying jobs, and excludes several

industries and economic sectors. Several other data sets are even more limited. Broader-based data are clearly needed. Nevertheless, it is probably significant that the available data usually suggest disparities, especially in treatment need, among the groups to which they are applicable.

B. Decayed, Missing, and Filled Teeth

1. Children

The National Caries Prevalence Survey (NCPS), carried out in 1979–1980, was the first of two recent surveys designed to monitor the oral health of U.S. school children. The most recent data available to assess racial differences in children's dental health comes from the survey of Oral Health of U.S. School Children, conducted by NIDR during the 1986–1987 school year. The sampling frame for this survey consisted of all U.S. children enrolled in kindergarten through grade 12 in public or private schools. A multi-stage probability sample (excluding Alaska) was drawn to represent the 43 million children aged five to 17 years, taking into account geographic region, urban vs. rural status, and median county income. In total, 39,206 children, drawn from 2,171 classes in 711 schools, were examined by trained teams using standardized diagnostic criteria. (5)

The prevalence of tooth decay (whether treated or not) has been declining in U.S. school children since the 1970s. (6) Between 1979–80 and 1987, U.S. school children experienced a decline in caries prevalence of approximately 20 percent. (5) Overall caries prevalence in 1987 was 50.1 percent.

However, between 1979–1980 and 1987, mean numbers of decayed, missing, and filled surfaces dropped twice as fast for Whites as for minorities.

Results from NIDR's 1986–87 survey indicate that, on the whole, children of racial minority groups (Blacks and all others) between the ages of five and 17 have slightly higher average numbers of decayed, missing, and filled tooth surfaces (3.40) than do White children of the same age (2.97). (5) This contrasts with the difference found in 1979–80, when minority children had better average scores.

At some ages, the 1986–87 data show no racial difference (e.g., at age seven, when the White score is marginally higher, and at age 11). In both groups, average DMFS scores increase with age. The scores appear to increase at roughly the same rate until age 16, when the scores for racial and ethnic minority adolescents (Blacks and all others) take a much sharper increase. These estimates for minority children should be regarded cautiously, since they are based on relatively small numbers.

An indicator of treatment status, the proportion of DMFS due to filled surfaces, suggested that greater treatment need exists among minority children. The percentage of DMF surfaces filled for White children was 87.5 percent, compared to 67.0 percent for Black and other children. (5)

The NIDR survey has not yet resulted in reports on tooth decay among Hispanic American children. However, data permitting inferences about differences by Hispanic background in the Southwest are available from the Southwestern Hispanic Health and Nutrition Examination

Survey (HHANES). Carried out among Hispanic Americans in five southwestern states in 1982–1983, the survey results are considered applicable to 84 percent of the Mexican American population in the United States. (7) Southwestern HHANES indicates that, of all surveyed Mexican American children five to 17 years of age, 46.0 percent had no caries and 4.4 percent had more than nine decayed, missing or filled teeth. (7) Except for ages 13 and 17, ages at which mean DMFS scores for Mexican American children were higher, mean DMFS scores for Mexican American children in 1982–1983 did not differ significantly from mean DMFS scores of children from the same region surveyed in the National Caries Prevalence Survey (NCPS) in 1979–1980. (7) (In general, scores are lower in the Southwest than in other parts of the country, because of natural fluoride in community water supplies. (6)) But the regional comparison also suggested that the Mexican American children did have a lower proportion of DMFS due to fillings.

Among the children examined in Southwestern HHANES, no linear association was found between mean DMFS scores and income (Table 1). However, children whose family incomes were below \$15,000 had a lower percentage of filled teeth surfaces than children from higher income families, especially children from families with incomes of \$40,000 or more. This result indicates greater unmet needs for dental care in lower-income children.

In contrast to the small excess in caries found among Black and Mexican American

children, data from an Indian Health Service (IHS) study raise the possibility that Native American children's dental health status is substantially poorer than that of other American children of the same age. (8) However, the IHS data, which come from the IHS Oral Health Survey conducted in 1983–1984, have considerable limitations. First, the IHS survey is based upon a sample of dental patients and not a community probability sample. The study subjects were 16,200 patients of all ages seen in IHS dental clinics in 11 IHS geographic areas. The use of a treatment population rather than a population-based probability sample may well result in biased estimates. Second, examiners did not use calibrated measurement tools. (9) However, since it is difficult to obtain dental health data on Native Americans from other sources, it is still useful to consider the IHS data.

As shown in Table 2, Native American IHS clinic patients between five and 17 years old were estimated to have a mean of 5.9 DMFT, compared with a national mean of 2.9 DMFT based on data obtained from the NCPS of U.S. school children in 1979–1980. Slightly more than half (53 percent) of these teeth were filled, whereas the national NCPS estimate for filled teeth in this age group was 79 percent. Based on that survey, mean DMFT differences between rural and urban children in the United States were minimal, making the possible differential between Native American and U.S. children seem all the more serious.

Although national surveys and other data sets covering large geographic areas can be useful for assessing average group differences,

state or local data sometimes demonstrate that within smaller areas disparities can depart from national estimates. A case in point is the South Carolina Dental Health and Pediatric Blood Pressure Survey, fielded in 1982–83. (10) For children aged 5 to 17 years, the average DMFT score was 3.8; 53 percent of carious teeth were untreated, compared to a national NIDR figure for 1979–1980 of 19 percent. There were clear differences between Whites, on the one hand, and Blacks and other racial minorities, on the other: the average DMFT score for White children was 3.4, and for racial minority children it was 4.3. Racial differences in mean DMFT score persisted after controlling for the number of erupted teeth and after stratifying for income. The South Carolina State Health Department also concluded that 54 percent of White children and 79 percent of racial minority children needed restorative treatment or tooth extractions.

A 1987 survey of oral health in Kentucky found that mean DMFS scores of Kentucky children (3.6) were somewhat higher than mean DMFS scores for all U.S. school children (3.1) found by the NIDR. (11) However, summary figures miss the extent of variability in a state marked by significant socioeconomic and cultural differences among its regions. Thus, the dental health status of children from Appalachia, a depressed area, is notably poorer than that of children from most other regions of the state.

2. Adults

The National Survey of Oral Health in U.S. Employed

Adults and Seniors, conducted by NIDR in 1985–1986, was designed to determine a baseline prevalence of coronal and root surface caries as well as periodontal destruction in an adult population. The survey sampled 15,132 employed persons age 18 to 64 through their workplace and 5,686 retired persons age 65 and over through multipurpose senior centers. (12)

The employed sample excludes workers in agriculture or mining, military personnel, the permanently unemployed, or persons working inside the home. It is intended to be representative of 100 million employed U.S. adults. Therefore, the study is limited for present purposes primarily in that it excludes the unemployed of working age, who are more likely to be members of racial and ethnic minorities. Moreover, by not including military personnel, this survey also excludes a racially mixed group of adults with complete dental insurance coverage. In addition, racial, ethnic and income breakdowns are not provided for the retired sample.

Results show substantially lower mean decayed and filled teeth (DFT) and decayed and filled surfaces (DFS) scores (measures that exclude missing teeth from the count) for employed Blacks than for employed Whites—mean DFT of 6.8 for Blacks as compared with 10.3 for Whites, and mean DFS of 14.3 for Blacks as contrasted with 24.5 for Whites. (12) However, without taking into account the numbers of teeth available, these estimates are not conclusive. More favorable scores for Blacks could result from either less tooth decay or more teeth having been extracted due to caries or

other causes. As NIDR noted in its summary of findings, because of tooth loss, estimates of caries prevalence based on DFS scores are erratic after age 35. (12) Filled teeth, as a percentage of total teeth decayed and filled, were more likely to be found among Whites as a whole than among Blacks: 93.2 percent vs. 77.9 percent. (12) The same patterns held when looking at decayed and filled surfaces (see Table 3). DFS scores for Whites and Blacks for root surfaces showed that Whites had a slightly higher mean score (1.0 vs. 0.9) but a much higher percentage of filled surfaces (i.e., filled surfaces as a percentage of total decayed and filled surfaces). The percentages were 60.4 percent vs. 29.7 percent, indicating much greater unmet need for root services among Blacks.

Despite the differing nature of the sample, these data for Black adults are consistent with NIDR's data for minority children in showing a lower percentage of filled (treated) teeth, and thus a higher level of unmet need. But they contrast with the children's data in indicating lower DFT/DFS scores for Blacks relative to Whites. If the data do in fact indicate lower levels of caries for Blacks, they appear to be consistent with conclusions of some earlier studies (6) as well as 1971-1974 data reported in the previous edition of this report. (13) It may be that a cohort effect is operating; only since the 1970s have findings emerged suggesting greater caries experience among Black as compared with White children, whereas historically Black populations have had significantly lower caries prevalence than White populations. (6)

Examining the results of the Southwestern HHANES for adults (14) indicates that, when compared with the general population of the western states (as measured by the National Health and Nutrition Examination Survey of 1971-74), adult Mexican Americans 18 years of age and older had lower mean DMFT scores but a higher proportion of untreated teeth (percent of DMFT due to decay was 16 percent in the HHANES sample and 8 percent in the NHANES sample). There was no difference in mean DMFT scores between Mexican American adults above and below the poverty level, but those below had a significantly higher mean number of decayed and missing teeth and a lower mean number of filled teeth.

Thus a pattern of lower mean DMFT scores combined with greater unmet need for treatment relative to the wider population characterizes the dental health of adult Mexican Americans. This pattern resembles results reported above for employed adult Black Americans (although the scores for Blacks excluded missing teeth), and for racial minority and Mexican American children. As was true for Mexican American children, income does not appear to affect caries prevalence among Mexican American adults, but it does have a clear negative effect on the likelihood of obtaining restorative treatment. Without having accounted for the effect of income in the comparison of the Southwest HHANES with data for other residents of western states, it is not possible to say how much of the above-noted difference in treatment levels in the two populations may be due to income as opposed to ethnicity.

C. Periodontal Disease

Periodontal diseases are associated with the deterioration of the tissue that anchors the teeth. Periodontal disease tends to progress in stages, beginning with acute gingivitis, then passing to chronic gingivitis, and finally, to periodontitis. In the very advanced stages of periodontal disease, tooth loss ensues.

For adults over the age of 35, periodontal disease has been found to be the most significant factor contributing to tooth loss. Bacteria in the mouth as well as plaque and calculus buildup are thought to play important roles in the pathogenesis of periodontal disease. Cigarette smoking, more prevalent among minorities, also contributes to the condition. Studies have demonstrated that periodontal pathology decreases with increased levels of oral cleanliness. (13)

1. Children

While periodontal disease is most prevalent in those over 35, it is also of concern for children, especially in its incipient forms. A subsample of children age 14 to 17 from the 1986-87 NIDR school children survey received periodontal exams. Data reported below are for White children, Black children, and Hispanic children. The Hispanic group is not separate from either of the racial groups; it refers to children of either race whose ethnic background is Hispanic. The number of minority children in the subsample was small, and the following preliminary estimates (15) should be analyzed cautiously. Conditions assessed in the children included gingival bleeding in one or more sites

and loss of attachment in one or more sites.

Black children had a one-third higher prevalence of gingival bleeding (74.9 percent) than did White children (55.1 percent). Hispanic children had a prevalence of gingival bleeding similar to White children. Loss of attachment of at least 2 mm was observed in nearly half of the Black children (44.3 percent), compared to only one in six White children (16.3 percent). On average, the condition was also more severe in Black children; the mean attachment loss (for all teeth in children with any degree of loss) in the Black children was 0.73 mm, compared to 0.55 mm in the White children. Hispanic children had a relatively high prevalence of attachment loss of at least 2 mm, 25.2 percent, and somewhat greater average severity than White children (mean attachment loss of 0.67 mm).

The South Carolina survey of public-school children between 5 and 17 years old determined that 94 percent had some gingivitis; 34 percent of the gingivitis cases were judged to be of moderate or severe intensity, as indicated by inflammation and bleeding gums. Moderate or severe gingivitis affected 30 percent of White and 38 percent of racial minority students. (10)

Results of a 1984-1985 study of 618 Native American (mostly Navajo) children age 14 to 19 residing in a New Mexico boarding school also suggest high prevalence of periodontal conditions; 70.6 percent had gingival bleeding. Although the age groups in this study and the NIDR periodontal subsample do not completely coincide, this statistic, if representative of Native American children

generally, suggests a prevalence almost as high as the Black children's. Furthermore, fully 88.7 percent of the Native American boarding-school children had attachment loss of 2 mm or more. (16)

2. Adults

Preliminary estimates (17) from the 1985-1986 NIDR Survey of Oral Health in U.S. Employed Adults indicate more periodontal disease among minorities than Whites. Hispanics (56.6 percent) and Blacks (52.9 percent) had a higher prevalence of gingival bleeding (in at least one site) than Whites (42.2 percent). Loss of attachment of at least 2 mm in one or more sites was somewhat more common in Blacks (84.5 percent) and Hispanics (83.8 percent) than in Whites (75.5 percent), but there were little or no differences in average attachment loss among adults with at least 2mm of loss. Periodontal pocketing (for pockets at least 4 mm deep) was considerably more prevalent in Blacks (23.6 percent) and Hispanics (22.8 percent) than in Whites (13.2 percent). Considering adults with any degree of pocketing, the condition was on average more severe in the minorities; average pocket depth was 1.46 mm for Blacks, 1.45 mm for Hispanics, and 1.28 mm for Whites.

D. Tooth Loss and Edentulism

Tooth loss is "the ultimate sequela of caries and periodontitis and one of the most severe compromises to dental function." (18) Complete toothlessness is termed edentulism. While recent indicators from the 1986 National Health

Interview Survey (NHIS) suggest an overall decline in both tooth loss and edentulism in the American populace as a whole, differences in prevalence and in the rate of decline exist for minorities and low income groups in comparison to the wider population.

Data from the 1986 NHIS, based on self-reports, provide an indication of edentulism rates. The survey found that rates of edentulism increase with age for all groups. Examining age groups within the 45-and-over populations reveals that Blacks generally have a higher frequency of edentulism than do Whites (Table 4). Although a slightly lower proportion of Blacks than Whites 45 to 54 years old were edentulous, and similar proportions age 55 to 64 were without permanent teeth, the pattern is reversed thereafter. Furthermore, the differential increases with each advancing age interval, so that for persons 85 and older, 53 percent of Whites in contrast to 74 percent of Blacks were totally without teeth.

An examination of time trends in NHIS data shows that rates of decline in edentulism appear to have been dramatic for Whites between 1957-58 and 1986 (Table 5). In 1957-58, Whites age 45 and over had considerably higher edentulism rates than racial minorities. For Whites age 45 and over, the edentulism rate declined by 39 percent. In contrast, percentages for racial minorities have remained at the same level—about one-quarter. The combination of a strong downtrend among Whites and little change among racial minorities may partly explain the convergence over time of the two groups' overall rates—to approximately one-quarter for persons age 45

and over. Similar trends hold for the age subgroups 45 to 64 years and 65 years and over. The data suggest that over the past 20 years, factors promoting better oral health have operated in the White adult population, but perhaps not in the Black adult population.

Using data from the 1985-1986 NIDR National Survey of Oral Health in U.S. Employed Adults and Seniors, Brown and Meskin analyzed not only edentulism and mean number of missing teeth, but also the total pattern of upper tooth loss. (18) They believe upper tooth loss is more important than edentulism and missing teeth for "understanding the extent and severity of dysfunction as well as the clinical options for restoring functions." For the working age population, the measures of tooth loss indicated more severe patterns of loss among Blacks than Whites. The patterns in Blacks also called for more extensive prosthetic treatment. Black and White differences widened with age in the working age population. For senior citizens, racial differences in the measures (excluding edentulism prevalence) abated somewhat, although a higher percentage of Black than White seniors in all age groups 65 and over had tooth loss patterns that required extensive prosthetic work.

An indication of relative levels of edentulism in Mexican Americans and the general U.S. population comes from comparing the percent of edentulous persons age 45 and over, given in Southwestern HHANES (see Table 7), with the percent of edentulous White persons, based on the 1986 NCHS data (Table 4).

While Hispanics overwhelmingly identify themselves as White, and would thus be included in the latter statistics, non-Hispanic Whites comprise the vast majority of the White category, making this a feasible comparison. From age 45 up until age 64, Mexican Americans in HHANES have lower edentulism rates than Whites in the NHIS, but for the category 65 to 74, the rate for Mexican Americans is higher. This comparison suggests a pattern of reversal at the senior ages similar to that shown in the comparison of edentulism in Blacks and Whites.

For Native Americans, the IHS Oral Health Survey estimated that the edentulism prevalence rate for those 55 and older was 26.2 percent (8), compared to 29.5 percent for Whites as reported in the 1986 NCHS survey (see Table 4). The IHS data are not broken down further by age.

Edentulism appears to be inversely related to both income and educational level (Table 6). While rising with advancing age in all groups, the percentage of edentulous persons declines with increased income as well as with higher levels of education.

Brown and Meskin also examined the relationship of income and educational level to edentulism. (18) They found that both low levels of education (less than a high school education) and low income (less than \$7,500 annually) were positively associated with earlier and more rapid tooth loss leading to severe tooth loss requiring extensive prosthetic treatment. At the other end of the spectrum, those with more than a high school education and yearly incomes of \$40,000 or more suffered

much less tooth loss and showed only limited need for prostheses. The intermediate income and educational categories represent intermediate levels of tooth loss and need for prosthetic treatment. In examining race jointly with education or income, Brown and Meskin found that when either education or income was controlled, racial differences were reduced and in some cases, as in rates of edentulism, they were eliminated altogether.

In summary, Blacks and Mexican Americans appear to have marginally lower rates of edentulism in comparison to Whites in middle age, but higher rates among those 65 and older. However, time trends suggest that Blacks and other racial minorities have lost the considerable advantage they once had in edentulism rates when compared to Whites. Edentulism prevalence is strongly influenced by both income and educational level; when education and income are controlled, the Black and White differential is small. However, very real differences exist between Blacks and Whites as well as among income and educational strata in sites of tooth loss and rates of development of tooth loss.

E. Oral Health Attitudes and Preventive Behaviors

The 1985 and 1986 National Health Interview Surveys collected information pertaining to oral health attitudes and preventive behaviors. The 1985 Health Interview Survey focused on prevention-related knowledge and behaviors. (19) The 1986 NHIS included questions on home use of fluoride products and dental sealants. (20)

Results from the 1985 NHIS (19) indicate that 78.2 percent of adults in the United States were aware that drinking fluoridated water from early childhood helps prevent tooth decay, and 95.0 percent knew that brushing and flossing teeth helps prevent gum disease. General levels of knowledge on these two aspects of oral health were high among Blacks and Whites alike. Approximately four in five Whites (79.1 percent) and three in four Blacks (74.3 percent) were aware of the positive benefits of fluoridation. Also, 95.5 percent of Whites and 92.8 percent of Blacks were aware of the positive benefits of brushing and flossing in helping to prevent gum disease. Similar levels of awareness were found for non-Hispanic and Hispanic Americans. Level of knowledge on both these subjects increased with increased levels of education and income.

By contrast, only 17.7 percent of all persons surveyed knew that dental sealants help prevent tooth decay. (19) Dental sealants are plastic coatings painted on chewing surfaces of teeth to prevent decay. While levels of knowledge on this particular aspect of oral health were generally low, there was considerable variation by race, ethnicity, income, and educational level. In this case, close to one in 10 Hispanics (9.0 percent) and Blacks (7.6 percent) knew of the preventive properties of these sealants; the corresponding figures for Whites and non-Hispanics were both nearly one in five (19.2 percent and 18.3 percent, respectively). Dental sealants have gained only limited use among dental practitioners. (21) The low level of public knowledge on this subject may stem from

the limited application of sealants, or the lack of advertisement of sealants as contrasted with extensive advertisement of fluoride toothpastes.

Data about preventive dental practices for children two to 16 years of age from the 1986 National Health Interview Survey indicate that a roughly equal percentage of White and Black children used fluoride toothpaste (Table 8). In both groups the percentages were high: 93.6 percent and 92.3 percent, respectively. More White than Black children used fluoride supplements (9.3 percent vs. 3.8 percent) or fluoride mouth rinses at home (13.1 percent vs. 11.4 percent). However, White children were somewhat less likely than Black children to be enrolled in a fluoride mouth rinse program at school (10.1 percent vs. 12.2 percent). The percentage of children using fluoride toothpaste tends to rise with family income, as does the percentage using fluoride supplements or fluoride mouth rinses at home. The percentage of children in a fluoride mouth rinse program at school declines as income rises, which is not surprising since most such programs are targeted to low-income pupils.

The preventive practice that varied most notably by race was use of dental sealants, although dental sealants were infrequently used in all racial and income groups (Table 8). White children were more than three times as likely as Black children to have had dental sealants applied (7.5 percent vs. 2.1 percent). The percentage of children with dental sealants increases with income.

In summary, the racial and ethnic differences in

preventive dental knowledge and behaviors are rather modest. Variation by income is apparent but not strong. It would be necessary to control for income to see what share of the racial differences are actually due to differences in income. More is said about prevention below in the section on access to and utilization of dental services.

F. Access to and Utilization of Dental Services

1. Measures of Dental Services Utilization

Utilization of dental services, as measured by the proportion of the population who reported an interval of less than one year since the last dental visit, appears to be increasing (see Table 9). In 1986, 55.1 percent of all noninstitutionalized Americans had made at least one visit to the dentist within the year before the interview, compared with 49.9 percent in 1981, and 42.2 percent in 1964.

A disparity exists between Whites and Blacks in the percent seeing a dentist within the past year, but it appears to have decreased by half between 1964 and 1981 (Table 9). It decreased by another 15 percent between 1981 and 1986. For White Americans in 1986, based on NHIS findings, the percentage reporting a dental visit within the past year was 57.3 percent as compared with 41.0 percent for Black Americans, a differential of 40 percent. Results of the 1985-1986 NIDR study of the oral health of United States adults were very similar; 60.9 percent of employed White adults 18 and older had seen a dentist within the last year compared with 42.9 percent of employed Black adults. (12) Approximately 50 percent more Blacks than

Whites surveyed in the NHIS reported not seeing a dentist for at least two years.

Among Hispanic Americans in 1986, 45.6 percent reported having had at least one dental visit within the past year (Table 10). This percentage falls well below the estimate for Whites. The average masks a notable difference between Mexican Americans and other Hispanic Americans; 38.6 percent of Mexican Americans compared to 53.0 percent of other Hispanic Americans had at least one dental visit within the past year. However, it appears that the relative utilization of Mexican Americans was even worse 10 years earlier.

Comparing 1986 and 1976-78 utilization (13) for Hispanics, the percentage with a dental visit in the past year increased by 36 percent for all Hispanics, 44 percent for Mexican Americans, and 27 percent for other Hispanics.

Family income and education also importantly affect utilization as measured by the percentage over age two who have seen a dentist within a year (Table 11). As income level increases, so does utilization. According to the NHIS, from 40.9 percent of those with family incomes less than \$10,000, the percentage of persons who had seen a dentist in the past year rose steadily to 73.5 percent among those with incomes over \$35,000. For some ages, changes by income are less pronounced. A positive effect of educational level is observed for all age groups.

Dental care is especially important for children. Although utilization figures for children are generally higher than for the general population, 1986 NCHS

figures show clear racial disparities: 64.8 percent of White children between 2 and 16 years of age as compared to 50.8 percent of Black children in the same age group were reported to have had a dental visit within the past year. (20) Among children age 5 to 11, 71 percent had seen a dentist at least once during the year prior to the interview. (22) However, as Table 12 reveals, low income, Black, and Mexican American children in this age group were much more likely than their general-population counterparts not to have seen a dentist within a year or to have never seen a dentist at all.

Another related measure of utilization is the average number of dental visits per person per year. In 1986, White Americans averaged 2.1, and Black Americans averaged 1.3 dental visits per year (Table 9). Hispanic Americans averaged 1.6 visits vs. 2.1 for White (Tables 9 and 10). Within the Hispanic population, the mean number of visits per person was 1.3 for Mexican Americans and 1.8 for all other Hispanics (Table 10).

For Whites, the higher mean of 2.1 annual dental visits may reflect, at least in part, the greater use of preventive services. This is suggested by data from the 1985-1986 NIDR survey of employed adults, which asked the reason for the last dental visit (see Table 13). By a wide margin, Whites were more likely than Blacks to cite a regular checkup as the reason (43.6 percent vs. 18.8 percent). For Blacks, the reason most often given was to have "teeth pulled or for other surgery." Thus, it appears that Whites are more likely than Blacks to use preventive dental services. Also, Blacks were more likely

to report unmet dental needs; 48.4 percent of Whites as contrasted with 70.3 percent of Blacks felt they needed dental treatment. Blacks were also more likely (27.6 percent vs. 17.8 percent) to feel that those needs were immediate. (12)

2. *Rates of Insurance Coverage for Dental Services*

One topic of great interest in the area of dental health is the impact of dental insurance status on oral health and on rates and patterns of utilization of dental services. Most dental insurance is provided as part of an employee benefits package. According to the 1986 National Health Interview Survey, 37.8 percent of all Americans had private dental insurance at the time of the interview. (20)

The 1986 NHIS reveals that Whites (39.0 percent) are about one-third more likely than Blacks (29.1 percent), and that non-Hispanics (38.3 percent) are about one-fifth more likely than Hispanics (31.3 percent), to have private dental coverage. (20) Rates of coverage increase with income—from 9.4 percent of those earning less than \$10,000 to 59.3 percent of those earning \$35,000 or more. Rates of coverage also increase with educational level—from 12.7 percent of those with less than nine years of formal schooling to 47.0 percent of those with 13 or more years. (20)

Dental services coverage is positively associated with use of services. Overall, in 1986 70.1 percent of those covered had made at least one visit to the dentist in the previous year, as compared to 49.9 percent of those not covered. (20) The insured

also had higher average annual per person visits (2.6 vs. 1.7) and a higher proportion reporting a check-up as the reason for their last visit was (48.0 percent vs. 29.7 percent). (20)

In general, the evidence suggests that the effect of private dental insurance on utilization is independent of race and income (Table 14). For all income groups and races, those with insurance visit dentists more often than those without insurance. Yet, regardless of coverage status, in 1986, Blacks of all ages were less likely than Whites to have visited a dentist in the previous year. Whites with private coverage were 24 percent more likely than their Black counterparts with private coverage to have seen a dentist, and uninsured Whites were 35 percent more likely than uninsured Blacks to have seen a dentist. Data in Table 14 for persons by family income indicate that the lowest-income group (family income less than \$10,000 per year) was somewhat more likely to have seen a dentist in the past year than in the next-highest family income group, regardless of coverage status; however, for the two remaining income groups, utilization increases with income in both coverage categories. Thus, race and income-group differences in coverage rates do not fully explain dental service utilization differentials of the race and income groups.

More detailed data, including measures of Medicaid coverage and the specific provisions of the insurance (such as copayment requirements and the continuity of coverage), might help explain these persisting utilization differentials and the lack of a monotonic income effect. For

example, it appears that full-year private dental insurance is a smaller factor in the coverage of disadvantaged groups than of others in the U.S. population: Data from the 1980 National Medical Care Expenditure Survey showed that those with full-year private coverage were 45 percent of the covered non-Hispanic Whites, compared to 36 percent of the covered Hispanic persons, 20 percent of the covered non-Hispanic Blacks, and 28 percent of the covered non-Hispanic persons of other races. (23)

3. *The Role of Medicaid in Dental Services Utilization of the Poor*

The NHIS data do not consider Medicaid assistance to the poor in evaluating coverage rates. According to the Health Care Financing Administration's summary of services that were covered by Medicaid as of October 1986, Medicaid is a potential source of coverage for dental services in 40 states and two U.S. territories. However, 11 of the states and one territory cover only the categorically needy's dental needs, thereby excluding the medically needy. (24) (The medically needy are people who, if their incomes were slightly lower, would qualify for welfare in their state.) Dentures are covered by Medicaid in 35 states and one territory, but the availability is limited in about one-quarter of these states to the categorically needy. States are required to screen and treat children for dental problems under the Early and Periodic Screening, Diagnosis, and Treatment program (EPSDT), which is a mandatory component of all Medicaid programs. (24)

By one measure, Medicaid

does appear to result in higher coverage than estimates of private dental coverage by race or income would indicate. Using Medicaid enrollment as an indicator of coverage, an analysis of the 1980 National Medical Care Utilization and Expenditure Survey (NMCUES) found that non-Hispanic Whites were less likely than either non-Hispanic Blacks or Hispanics to have Medicaid dental insurance (6.8 percent, 27.5 percent and 17.8 percent, respectively.) (23) Medicaid enrollees constituted half of those designated as having dental coverage among non-Hispanic Blacks, a third of those among Hispanics and non-Hispanic people of races other than White and Black, but only 16 percent among non-Hispanic Whites. However, the assumption that Medicaid is a source of dental services coverage for all Medicaid enrollees results in an overestimate of coverage rates, because only 77.3 percent of Medicaid recipients in 1980 lived in states covering dental services under Medicaid. (23)

Even if Medicaid does play a role in narrowing coverage differences between racial/ethnic groups, it appears that inadequate coverage of dental care under Medicaid is a source of inequities in access across groups. One possible indication is the low utilization rate, 31.8 percent among the Medicaid-covered population. This was the lowest rate of any of the insurance status groups in the survey, including the uninsured, of whom 38.5 percent used dental services in 1980. (23) The low rate may be partly attributable to the limitations and specifics of dental services coverage under Medicaid. (23) Another factor may be reluctance by private dentists to participate

in Medicaid. Dentists in private practice surveyed by the American Dental Association in 1988 reported only 5.1 percent of their patients were covered by a public assistance program. (25)

Program data from the Health Care Financing Administration suggest that the proportion of Medicaid recipients using dental services may have been even lower, at 23 percent. (24) Use varies with age; 16.7 percent of Medicaid recipients under age 6, 37.9 percent age 6 to 20, 21.9 percent age 21 to 64, and 7.9 percent age 65 and over used dental services in Fiscal Year 1983. (24) These figures are lower than the estimates reported in Table 14 for comparable age groups with or without private insurance in the U.S. noninstitutionalized population. Children comprise the bulk of the Medicaid-covered population that uses dental services (63.8 percent of the Medicaid dental services users were age 20 or under in Fiscal Year 1983 (24)). Much of their use may have been due to the mandatory EPSDT provisions. One limitation of the HCFA Medicaid data is that they include only Medicaid-financed dental services, and to the extent that Medicaid recipients obtain dental care financed in other ways, the HCFA data underestimate utilization.

Other evidence pointing to an inadequacy in dental care under Medicaid comes from a survey of state Medicaid programs. (26) The survey found that controls placed on dental services available to children under the EPSDT program resulted in checkup schedules that do not meet accepted standards of preventive dental care for

children, and in the exclusion of services deemed desirable by dental health experts.

Taken together, comparisons of dental visits and insurance coverage among population groups, along with the available data on Medicaid's role in dental services utilization, suggest that access to dental care is limited among disadvantaged groups compared to the rest of the population. This conclusion is reinforced by dental health status data, reviewed earlier in the chapter, showing greater unmet need for care (i.e., more untreated dental conditions) among children and adults of racial/ethnic minorities.

Eliminating barriers to care has been shown to be effective in improving dental health status. In a randomized trial that examined the effects of different levels of cost-sharing on various population subgroups, particularly the disadvantaged, the Rand Corporation found that the least educated and those with the poorest oral health experienced significant reductions in caries and periodontal disease when enrolled in the plan requiring no cost-sharing. This suggests that insurance coverage benefits those persons most in need of care if they are adequately covered. (27) For preschool children, comparison of cost-sharing plan effects by income group showed that children from middle and low income families benefited most from being enrolled in the plan requiring no cost-sharing. (28) This study, conducted between 1974 and 1982 in six sites, presents convincing evidence that improved access to care can lead to better dental health for disadvantaged groups.

Table 1

Mean decayed, missing and filled surfaces (DMFS) scores and percent of DMFS due to decayed, missing and filled surfaces in Mexican Americans 5 to 17 years of age, Southwestern HHANES, 1982-83

Family Income in US Dollars	n*	Mean DMFS	Percent of Total DMFS		
			De-cayed**	Filled**	Miss-ing
<6,000	292	4.4	33.4	63.5	3.1
6,000-9,999	409	3.4	29.5	62.8	7.7
10,000-14,999	440	3.2	30.7	63.8	5.5
15,000-24,999	665	3.7	26.4	67.5	6.1
25,000-39,999	403	3.8	21.6	71.3	7.1
40,000 +	113	4.2	15.9	79.1	5.0

*n=number of individuals. The total number of children who were dentally examined and had income information was 2,322.

**p<.05

Source: Amid L. Ismail, Brian A. Burt, Janet A. Brunelle, "Prevalence of Dental Caries and Periodontal Disease in Mexican-American Children Aged 5-17 Years: Results from Southwestern HHANES, 1982-1983," American Journal of Public Health, Vol. 77, No. 8, p. 968.

Table 2

Mean decayed, missing and filled teeth (DMFT) scores and percent of DMFT due to decayed, missing and filled teeth for Native American children in Indian Health Service (IHS) clinics in 11 IHS geographical areas (1983-1984) as compared to all American children (1979-1980)

Age 5-17	DMF teeth	Percent of DMFT		
		Percent decayed	Per-cent miss-ing	Per-cent filled
Native Americans (IHS)	5.9	44	2.2	53
National (All Children)	2.9	19	2.4	79
Non-SMSA (Rural)	3.0	21	2.8	76
SMSA (Urban)	2.9	18	2.2	80

Source: Department of Health and Human Services. Indian Health Service, "Findings from the Oral Health Survey: A Summary of Selected Data," p. 47. Comparative national figures are from the National Caries Prevalence Survey of 1979-80 conducted by the National Institute of Dental Research.

Table 3

Mean, standard deviation and percent components of decayed (D), and filled (F) surfaces (S) for employed persons—whites only, U.S. 1985

Age group (sample size)	Total			
	Mean DFS	St Dev	%D/DFS	%F/DFS
18-19 (263)	12.038	8.498	10.25	89.75
20-24 (1428)	14.510	11.958	10.19	89.81
25-29 (1751)	18.083	13.380	8.66	91.34
30-34 (1540)	22.499	15.511	5.82	94.18
35-39 (1438)	27.315	17.141	2.65	97.35
40-44 (1616)	32.053	19.794	3.28	96.72
45-49 (1431)	33.346	21.008	2.87	97.13
50-54 (1300)	32.412	21.490	2.52	97.48
55-59 (1075)	31.534	20.952	2.48	97.52
60-64+ (986)	30.341	20.922	2.37	97.63
All Ages	24.513	18.418	4.63	95.37

Mean, standard deviation and percent components of decayed (D) and filled (F) surfaces (S) for employed persons—blacks only, U.S. 1985

Age group (sample size)	Total			
	Mean DFS	St Dev	%D/DFS	%F/DFS
18-19 (27)	10.404	9.250	42.38	57.62
20-24 (164)	12.192	9.839	23.36	76.64
25-29 (224)	15.125	12.222	18.85	81.15
30-34 (243)	13.486	11.164	16.14	83.86
35-39 (248)	14.240	11.588	14.99	85.01
40-44 (241)	19.230	14.195	10.76	89.24
45-49 (184)	15.006	14.643	17.92	82.08
50-54 (162)	15.938	14.621	15.28	84.72
55-59 (120)	11.548	11.419	16.23	83.77
60-64+ (89)	10.212	11.631	36.70	63.30
All Ages	14.306	12.380	17.63	82.37

Source: National Institute of Dental Research. Oral Health of United States Adults: National Findings. 1987 National Institute of Health Pub. No. 87-2868, pp. 45, 52.

Table 4

Number of dentate and edentulous population, percent of total population, rate of dental visits per person per year, and percent of dentate and edentulous population with a dental visit in past year for persons 45 years of age and over, by dentition status and race: United States, 1986

	Number in thousands		Percent of total population		Rate per person per year		Percent	
	Dentate	Edentu- lous	Dentate	Edentu- lous	Dental visits		Dental visit in past year	
					Dentate	Edentu- lous	Dentate	Edentu- lous
RACE								
White								
All ages, 45 years and over	47,708	15,391	74.8	24.1	2.8	0.6	65.7	10.2
45-54 years	16,971	2,343	87.0	12.0	2.3	*0.3	67.0	12.1
All ages, 55 years and over	30,737	13,048	69.5	29.5	3.2	0.7	64.9	9.8
55-64 years	15,001	4,248	77.0	21.8	3.0	1.3	65.8	12.7
65-74 years	10,634	4,478	69.7	29.4	3.3	0.7	65.6	9.3
75 years and over	5,102	4,323	53.7	45.5	3.1	*0.1	60.7	7.6
77-84 years	4,277	3,365	55.5	43.7	3.2	*0.1	62.3	7.7
85 years and over	825	958	45.9	53.3	*2.8	*0.4	52.5	*7.1
Black								
All ages, 45 years and over	5,038	1,672	74.2	24.6	1.6	*0.6	39.0	13.3
45-54 years	2,133	253	88.4	10.5	1.7	*0.8	48.0	*22.1
All ages, 55 years and over	2,905	1,419	66.4	32.4	1.6	*0.5	32.4	11.8
55-64 years	1,594	459	76.7	22.1	*1.4	*1.3	35.8	*14.2
65-74 years	962	481	66.0	33.0	2.5	*0.4	31.7	*11.6
75 years and over	350	478	41.6	56.8	*0.3	—	*18.9	*9.4
74-84 years	313	356	46.2	52.6	*0.3	—	*20.8	*10.4
85 years and over	*37	122	*22.6	74.4	—	—	*2.7	*7.4

* Figure does not meet standards of reliability or precision.

Note: Data are based on household interviews of the civilian noninstitutionalized population.

Source: Excerpted from National Center for Health Statistics. S. Jack and B. Bloom, "Use of Dental Services and Dental Health: United States, 1986." Vital and Health Statistics, Series 10, No. 165, Table 17, p. 52.

Table 5

Percent of white and all other edentulous persons 45 years and over in the population by age:
United States, July 1957–June 1958, 1971, and 1986

Age	White			All other ¹		
	July 1957– June 1958	1971	1986	July 1957– June 1958	1971	1986
45 years and over	39.4	oi032.7	oi024.1	oi023.3	oi024.1	oi023.4
45–64 years	30.3	23.9	17.1	17.0..	17.2	14.7
65 years and over	60.6	51.4	35.9	43.1	42.9	41.1

¹ Figures for Black persons have been combined with those for persons of races other than White to facilitate comparison between estimates.

Source: (1) National Center for Health Statistics. Edentulous Persons, United States, 1971. Department of Health, Education and Welfare Pub. No. (HRA) 74–1516, Series 10. Data from the National Health Survey, No. 89, Rockville, MD, Jun 1974. (2) National Center for Health Statistics. Use of Dental Services and Dental Health, United States, 1986. Department of Health and Human Services Pub. No. (PHS) 88–1593, Series 10. Data from the National Health Survey, No. 165, Hyattsville, MD, Oct 1988, Table 17, p. 52.

Table 6

Percent of edentulous persons by family income, educational level, and age: United States, 1986

	Age, Years				
	45–54	55–64	65–74	75–85	85 or more
Family Income \$					
Less than \$15,000	23.4	34.2	41.1	52.9	62.0
\$15,000–\$34,999	13.6	22.0	23.9	34.6	39.7
\$35,000 or more	7.0	9.9	13.2	28.5	*44.7
All Incomes	11.7	21.7	29.7	44.3	54.8
Educational Level					
All levels	11.7	21.7	29.7	44.3	54.8
Less than high school education	22.5	35.3	41.9	54.7	63.1
High school graduate	11.9	19.4	25.9	37.5	43.6
Some college or more	4.8	8.3	13.3	22.9	28.7

* Figure does not meet standards of reliability or precision.

Source: Excerpted from National Center for Health Statistics. Use of Dental Services and Dental Health, United States, 1986. Department of Health and Human Services Pub. No. (PHS) 88–1593, Series 10. Data from the National Health Survey, No. 165, Hyattsville, MD, Oct 1988, Table 17, pp. 52–55.

Table 7

Percent distribution* of edentulous Mexican-Americans aged 18 to 74 years by gender (Southwestern HHANES, 1982-83)

Age Group	Male			Female			Total	
	n	Per- cent Eden- tulous	S.E.**	n	Per- cent Eden- tulous	S.E.**	n	Per- cent Eden- tulous
18-24	348	0.0	0.000	455	0.0	0.000	803	0.0
25-34	439	0.0	0.000	550	0.2	0.002	989	0.1
35-44	262	1.1	0.007	350	1.8	0.008	612	1.5
45-54	283	5.1	0.016	355	8.3	0.018	638	6.7
55-64	208	14.5	0.039	230	16.9	0.039	438	15.7
65-74	88	30.8	0.055	112	41.9	0.052	200	37.0
All ages	1,628	3.5	0.006	2,052	5.2	0.006	3,680	4.3

* Percentages of edentulous adults were computed using weighted sample sizes.

**Standard errors were computed assuming that a multi-stage clustered sample was selected and not a simple random sample.

Source: A.I. Ismail, B.A. Burt, J.A. Brunelle, "Prevalence of Total Tooth Loss, Dental Caries and Periodontal Disease in Mexican American Adults: Results from the Southwestern HHANES," Journal of Dental Research, Jun 1987, Vol. 66, No. 6, p. 1185.

Table 8

Number of total population, number of dental visits per child per year, and percent of children 2-16 years of age with some preventive dental practices, by race and family income: United States, 1986

Characteristic	Total population	Visits per child	Children who:					
			Had a dental visit in past year	Use fluoride tooth-paste	Use fluoride supplements	Use fluoride mouth rinse at home	Are in fluoride mouth rinse program at school	Have dental sealants
RACE								
White								
Total	42,458	2.2	64.8	93.6	9.3	13.1	10.1	7.5
2–4 years	8,911	0.7	32.1	91.7	16.3	6.6	1.1	1.1
5–8 years	11,353	1.9	71.5	93.9	13.8	14.2	15.4	7.4
9–11 years	7,757	2.5	76.1	94.7	8.1	15.6	19.8	12.8
12–14 years	8,316	3.2	73.4	93.8	2.8	16.2	8.4	10.0
15–16 years	6,121	2.9	73.6	93.8	*1.0	12.8	3.4	7.1
Black								
Total	7,954	1.3	50.8	92.3	3.8	11.4	12.2	2.1
2–4 years	1,565	*0.6	26.0	89.8	*4.4	8.4	*3.3	*0.3
5–8 years	2,188	*1.0	57.4	94.3	5.3	16.1	16.4	*1.7
9–11 years	1,425	*0.7	56.8	93.2	*3.6	10.8	19.4	*3.8
12–14 years	1,636	1.9	56.4	91.5	*2.7	11.0	13.6	*3.3
15–16 years	1,139	2.5	57.0	91.7	*1.8	7.6	*5.4	*1.6

(Continued on pg. 232)

Table 8

Number of total population, number of dental visits per child per year, and percent of children 2–16 years of age with some preventive dental practices, by race and family income: United States, 1986—Continued

Characteristic	Total population	Visits per child	Children who:					
			Had a dental visit in past year	Use fluoride tooth-paste	Use fluoride supplements	Use fluoride mouth rinse at home	Are in fluoride mouth rinse program at school	Have dental sealants
5–8 years	3,829	2.3	84.5	96.0	14.2	15.7	11.2	11.3
9–11 years	2,626	3.0	89.0	95.9	9.5	17.9	15.3	20.8
12–14 years	3,068	4.0	87.0	94.7	3.6	17.8	6.5	15.9
15–16 years	2,389	3.8	87.7	95.6	*0.9	13.4	*1.4	10.4
FAMILY INCOME								
Less than \$10,000								
Total	7,267	1.3	49.4	92.0	5.8	9.0	13.5	2.2
2–4 years	1,670	*0.7	26.9	89.4	8.3	6.7	*3.4	—
5–8 years	1,999	1.2	56.7	92.4	7.3	11.6	18.8	*2.0
9–11 years	1,364	*1.3	55.3	93.7	*4.4	8.2	22.4	*4.2
12–14 years	1,316	*1.5	56.5	93.4	*3.9	9.3	15.7	*3.6
15–16 years	918	2.6	55.4	91.1	*2.5	*8.5	*4.0	*1.7
\$10,000–\$19,999								
Total	9,822	1.5	52.4	93.2	6.3	12.3	12.8	3.8
2–4 years	2,315	*0.5	25.7	92.5	11.4	7.3	*1.9	*0.5
5–8 years	2,664	1.2	61.6	93.1	9.1	14.3	18.6	3.2
9–11 years	1,696	1.6	62.1	93.6	*4.0	12.5	24.4	6.7
12–14 years	1,850	2.4	59.3	94.0	*1.5	16.2	13.0	5.5
15–16 years	1,297	2.2	58.9	93.3	*1.1	11.4	*5.0	*4.5
\$20,000–\$34,999								
Total	14,642	2.1	63.8	94.8	10.4	14.2	10.7	6.7
2–4 years	3,171	*0.7	31.3	93.5	18.5	8.2	*0.9	*1.0
5–8 years	4,060	2.0	70.9	94.9	16.0	16.3	15.8	7.8
9–11 years	2,727	2.6	77.9	96.1	8.1	17.4	20.2	11.7
12–14 years	2,707	3.0	72.3	94.3	*1.7	16.8	8.1	7.6
15–16 years	1,976	2.7	70.2	96.0	*1.0	12.0	6.2	5.7
\$35,000 or more								
Total	14,517	2.8	78.9	94.8	9.5	14.5	7.5	12.2
2–4 years	2,604	1.1	43.0	91.2	17.4	6.3	*1.0	*2.1

* Figure does not meet standard of reliability or precision (more than 30 percent relative standard error in numerator of percent or rate).

Note: Data are based on household interviews of the civilian noninstitutionalized population.

Source: National Center for Health Statistics. S. Jack and B. Bloom, "Use of Dental Services and Dental Health: United States, 1986." Vital and Health Statistics, Series 10, No. 165, Department of Health and Human Services Pub. No. 88-1593, Table 16, p. 50, 51.

Table 9

Dental visits and interval since last visit, by selected patient characteristics: United States, 1964, 1981, and 1986

Selected characteristic	Dental visits			Interval since last dental visit						Never visited dentist		
	1964	1981	Num- ber per person	Less than 1 year			2 years or more			1964	1981	1986
				1964	1981	1986	1964	1981	Percent of popula- tion ¹			
Total ^{2,3}	1.6	1.7	2.0	42.2	49.9	55.1	28.2	24.8	24.4	16.6	11.0	10.1
Age												
Under 15 years	1.3	1.5	1.7	39.5	48.2	52.5	5.4	6.7	7.0	46.4	34.3	32.3
Under 5 years	0.3	0.5	0.4	11.1	14.9	18.7	0.3	*0.6	0.5	86.9	81.9	75.3
5-14 years	1.9	2.0	2.3	54.9	64.6	70.7	8.2	9.7	10.5	24.5	10.8	9.2
15-44 years	1.9	1.8	2.0	51.0	54.8	60.4	26.5	24.5	25.5	3.9	2.1	1.5
45-64 years	1.7	1.8	2.2	38.4	49.6	54.6	45.5	36.2	34.7	1.3	0.6	0.6
65 years and over	0.8	1.5	2.1	20.8	34.6	41.7	66.8	56.1	49.9	1.5	0.5	0.5
65-74 years	0.9	1.6	2.4	24.4	38.6	46.2	63.8	51.7	45.5	1.1	*0.3	0.5
75 years and over	0.6	1.3	1.6	14.1	27.9	34.4	72.4	63.6	57.0	2.3	*0.6	*0.5
Sex ²												
Male	1.4	1.6	1.8	40.0	47.9	52.8	28.8	26.1	26.1	16.1	11.2	10.4
Female	1.7	1.8	2.1	43.9	52.0	57.3	27.6	23.5	22.8	15.1	10.6	9.9
Race ²												
White	1.7	1.8	2.1	44.7	52.2	57.3	27.3	23.7	23.1	13.8	10.2	9.7
Black ⁴	0.9	1.1	1.3	22.8	35.5	41.0	35.3	33.1	34.1	27.1	14.3	12.2
Family income ^{2,5}												
Less than \$10,000	0.9	1.1	1.3	25.8	37.0	40.4	34.6	33.3	35.7	27.0	15.5	13.1
\$10,000-\$14,999	0.9	1.3	1.3	29.2	37.3	42.3	34.3	32.8	33.9	22.0	14.3	13.4
\$15,000-\$19,999	1.4	1.4	1.6	39.1	42.3	48.6	30.0	30.0	29.6	16.1	12.9	11.8
\$20,000-\$34,999	1.9	1.7	2.2	49.6	50.1	58.3	24.9	24.4	22.5	11.0	10.7	9.8
\$35,000 or more	2.8	2.2	2.7	63.3	63.5	70.8	16.6	16.2	13.8	7.0	7.3	6.9
Geographic region ²												
Northeast	2.1	2.0	2.2	47.9	55.2	59.9	25.7	22.4	22.7	12.7	8.7	8.7
Midwest	1.6	1.7	2.0	44.0	52.2	58.6	28.8	24.6	22.9	13.0	9.6	8.5
South	1.2	1.5	1.6	35.0	44.7	48.3	30.0	28.1	28.4	20.8	12.7	11.8
West	1.8	1.7	2.2	43.3	50.3	57.8	27.5	22.0	21.1	14.5	11.8	10.5
Location of residence ²												
Within MSA	1.8	1.8	2.0	44.5	52.0	56.4	26.8	23.0	23.3	14.3	10.5	9.9
Outside MSA	1.2	1.4	1.7	37.8	45.9	51.1	30.5	28.5	27.9	17.9	11.6	10.8

¹ Denominator includes unknown interval since last dental visit. In 1986, 2.2 percent of respondents did not know interval since last dental visit.² Age adjusted.³ Includes all other races not shown separately and unknown family income.⁴ 1964 data are for all other races.⁵ Family income categories for 1986. Income categories in 1964 are: less than \$2,000; \$2,000-\$3,999; \$4,000-\$6,999; \$7,000-\$9,999; and \$10,000 or more; and, in 1981 are: less than \$7,000; \$7,000-\$9,999; \$10,000-\$14,999; \$15,000-\$24,999; and \$25,000 or more.

* Relative standard error greater than 30 percent.

Note: Data are based on household interviews of a sample of the civilian noninstitutionalized population.

Source: National Center for Health Statistics. Health, United States, 1987, Department of Health and Human Services Pub. No. (PHS) 88-1232, Mar 1988, Washington, DC. U.S. Government Printing Office, p. 107.

Table 10

Percent of Hispanic persons age two and over with a dental visit in past year, and average annual number of visits per person for Hispanic persons, by Hispanic ancestry and age: United States, 1986

Age	Percent of Persons With a Dental Visit in Past Year *			Number of Dental Visits Per Person Per Year *		
	Total	Mexican American	Other Hispanic	Total	Mexican American	Other Hispanic
All ages**	45.6	38.6	53.0	1.6	1.3	1.8
Under 45 years	48.7	41.2	57.9	1.6	1.4	1.8
45-64 years	44.7	40.0	48.5	1.4	1.1	1.7
65 years and over	27.6	21.3	31.9	2.0	1.7	2.2

* Two years of age and over.

** Age-adjusted.

Source: National Center for Health Statistics. Use of Dental Services and Dental Health: United States, 1986. Department of Health and Human Services Pub. No. (PHS) 88-1593, Series 10. Data from the National Health Survey, No. 165, Hyattsville, MD, Oct 1988, Table C, p. 5, Table 1, p. 15, and Table 2, p. 18.

Table 11

Percent distribution of persons two years of age and over by interval since last dental visit according to educational level and family income: United States, 1986

Characteristic	Interval since last dental visit							
	All intervals ¹	Less than 1 year			1 year up to 2 years	2 years up to 5 years	5 years or more	Never
		Total	Less than 6 months	6–11 months				
EDUCATIONAL LEVEL ²								
Less than 9 years		Percent distribution						
All ages, 22 years and over	100.0	27.7	16.3	10.1	6.7	19.6	41.4	2.7
22–34 years	100.0	37.7	21.9	14.2	7.9	22.9	18.4	10.5
35–44 years	100.0	33.3	17.9	13.8	9.6	23.6	26.8	*4.3
45–54 years	100.0	32.2	19.4	11.3	10.2	23.5	29.9	*3.4
55–64 years	100.0	27.1	17.0	9.3	6.8	21.5	41.8	*1.2
65 years and over	100.0	23.1	13.4	8.4	4.9	16.2	52.9	*0.8
9–11 years								
All ages, 22 years and over	100.0	39.2	22.9	14.7	8.3	21.3	27.9	1.7
22–34 years	100.0	44.3	23.2	19.1	10.8	24.5	15.4	3.3
35–44 years	100.0	42.2	25.6	14.5	10.6	23.2	21.9	*1.1
45–54 years	100.0	38.8	24.2	13.5	6.5	22.6	28.4	*1.7
55–64 years	100.0	37.4	24.2	11.9	7.0	18.8	34.3	*0.5
65 years and over	100.0	32.4	19.1	12.4	5.6	17.1	42.4	*0.8
12 years								
All ages, 22 years and over	100.0	54.8	34.3	18.9	9.9	18.4	14.5	0.5
22–34 years	100.0	54.3	31.7	20.8	11.4	21.0	10.3	0.9
35–44 years	100.0	58.0	36.6	19.5	10.7	18.0	11.1	*0.4
45–54 years	100.0	56.8	36.2	18.9	9.9	17.4	13.7	*0.2
55–64 years	100.0	54.1	36.2	16.3	8.0	16.8	19.4	*0.2
65 years and over	100.0	49.9	33.2	15.3	6.6	14.4	26.6	*0.3
13 years or more								
All ages, 22 years and over	100.0	70.2	45.5	22.6	9.0	12.3	6.8	0.3
22–34 years	100.0	67.2	41.0	24.1	10.9	14.8	5.3	0.6
35–44 years	100.0	73.1	47.3	23.7	9.2	11.1	5.3	*0.2
45–54 years	100.0	74.4	51.6	21.0	7.2	10.5	6.5	*0.1
55–64 years	100.0	72.8	51.2	19.3	6.8	10.2	8.5	*0.1
65 years and over	100.0	67.1	45.8	19.2	5.6	10.2	16.1	*0.2
FAMILY INCOME ³								
Less than \$10,000								
All ages	100.0	40.9	23.8	15.8	9.5	17.8	23.2	7.2
2–4 years	100.0	26.9	17.3	8.7	*2.6	*0.8	—	63.8
5–11 years	100.0	56.1	32.8	20.6	11.7	12.5	*1.3	17.4
12–17 years	100.0	56.8	32.0	22.0	11.6	18.2	6.8	5.0
18–34 years	100.0	52.0	31.2	19.5	11.7	20.2	11.9	3.2
35–44 years	100.0	39.0	19.5	18.1	14.5	21.2	22.2	*2.0
45–54 years	100.0	33.4	18.7	14.3	8.1	21.7	32.4	*3.3
55–64 years	100.0	27.4	16.4	9.9	6.9	21.6	41.4	*1.2
65 years and over	100.0	22.2	12.4	9.0	5.6	16.9	52.8	*0.9
65–74 years	100.0	23.2	13.7	8.7	4.7	19.5	49.6	*1.2
75 years and over	100.0	21.2	11.1	9.4	6.5	14.3	56.1	*0.6

See footnotes at end of table.

Table 11

Percent distribution of persons two years of age and over by interval since last dental visit according to educational level and family income: United States, 1986—Continued

Characteristic	Interval since last dental visit							
	All intervals ¹	Less than 1 year			1 year up to 2 years	2 years up to 5 years	5 years or more	Never
		Total	Less than 6 months	6–11 months				
75 years and over	100.0	21.2	11.1	9.4	6.5	14.3	56.1	*0.6
\$10,000–\$19,000								
All ages	100.0	47.5	27.9	17.6	9.4	18.3	16.6	6.9
2–4 years	100.0	25.7	15.6	9.3	*3.5	*0.8	—	64.8
5–11 years	100.0	61.8	34.9	24.3	8.3	10.0	*1.4	17.3
12–17 years	100.0	57.6	32.4	22.2	10.2	17.8	5.8	7.2
18–34 years	100.0	50.3	27.8	20.7	12.6	22.2	11.4	2.6
35–44 years	100.0	46.6	27.5	16.8	10.5	22.3	18.7	*1.1
45–54 years	100.0	41.6	26.9	13.2	9.5	24.3	22.4	*1.2
55–64 years	100.0	40.9	26.7	13.2	8.1	21.1	28.3	*0.7
65 years and over	100.0	42.3	27.0	13.5	5.7	15.4	34.9	*0.3
65–74 years	100.0	44.3	29.2	13.7	5.8	16.2	31.9	*0.4
75 years and over	100.0	38.4	22.9	13.1	5.6	13.7	40.7	—
\$20,000–\$34,999								
All ages	100.0	61.0	38.2	20.6	8.9	14.6	9.4	4.9
2–4 years	100.0	31.3	19.0	10.5	*1.9	*0.8	—	60.0
5–11 years	100.0	73.7	47.1	23.5	7.5	7.6	*0.7	9.6
12–17 years	100.0	71.1	45.6	22.2	9.6	13.2	2.7	3.0
18–34 years	100.0	61.1	35.4	23.5	10.7	18.4	7.7	0.8
35–44 years	100.0	61.7	38.3	21.4	10.2	16.8	10.4	*0.2
45–54 years	100.0	56.3	37.3	17.2	9.5	17.0	15.3	*0.6
55–64 years	100.0	55.9	38.3	15.8	8.2	14.6	20.3	*0.1
65 years and over	100.0	60.6	41.3	17.5	5.6	12.3	20.5	*0.2
65–74 years	100.0	63.9	44.2	17.9	5.7	12.7	16.7	*0.2
75 years and over	100.0	52.6	34.1	16.6	*5.4	11.3	30.1	*0.1
\$35,000 or more								
All ages	100.0	73.5	49.1	22.0	7.9	9.7	4.9	2.7
2–4 years	100.0	43.0	30.0	10.8	*2.6	*0.6	—	46.4
5–11 years	100.0	86.3	57.3	25.5	5.4	2.7	*0.2	4.6
12–17 years	100.0	85.8	58.7	23.7	6.3	5.6	*0.9	*0.7
18–34 years	100.0	69.4	43.5	23.8	10.6	13.5	4.2	0.7
35–44 years	100.0	75.6	50.6	23.0	8.5	10.6	4.6	*0.1
45–54 years	100.0	71.6	49.8	19.9	8.0	11.9	7.5	*0.1
55–64 years	100.0	71.9	50.0	19.6	6.6	10.8	9.7	*0.1
65 years and over	100.0	67.0	48.2	17.5	5.6	8.3	18.1	*0.1
65–74 years	100.0	72.0	53.2	17.2	5.0	8.2	14.1	—
75 years and over	100.0	54.8	35.8	18.4	*7.2	*8.8	28.1	*0.4

¹ Includes unknown interval.

² Persons with unknown educational level not shown separately.

³ Persons with unknown income not shown separately.

* Figure does not meet standards of reliability or precision.

Note: Data are based on household interviews of the civilian noninstitutionalized population.

Source: National Center for Health Statistics. S. Jack and B. Bloom, "Use of Dental Services and Dental Health: United States, 1986." Vital and Health Statistics, Series 10, No. 165. Department of Health and Human Services Pub. No. (PHS) 88-1593, Table 4, pp. 22, 23.

Table 12

Children ages 5–11 years with inadequate dental care: United States, 1986

	No Visit	
	Within a year	Ever
	Percent of Children	
All Children	28.3	11.4
Family Income less than \$10,000	43.4	17.4
Mexican American	49.4	24.3
Black	41.3	16.9

Source: Mary Grace Kovar, Susan Jack, Barbara Bloom, "Dental Care and Dental Health: NHIS," American Journal of Public Health, Nov 1988, Vol. 78, No. 11, Table 1, p. 1496.

Table 13

Main reason given by employed persons for last visit for dental care, by race, United States, 1985

	Whites		
	Total	Males	Females
No Visit	.70	1.00	.32
Regular Checkup	43.64	38.37	50.33
Teeth Cleaned	16.04	17.38	14.33
Teeth Filled/Broken Tooth	13.24	14.79	11.28
Teeth Pulled or Other Surgery	9.41	11.16	7.19
Toothache	2.93	3.45	2.28
Adjustment or Repair of Denture/Bridge Work	3.66	3.38	4.03
Have a Denture Made	3.50	3.76	3.18
For a Prescription	.06	.02	.11
Bleeding Gums or Periodontal Disease	1.13	1.14	1.11
Loose Teeth	.23	.08	0.41
Problems With Wisdom Teeth	1.25	1.39	1.09
Other Reasons	3.63	3.43	3.89
Unknown	.57	.65	.46

	Blacks		
	Total	Males	Females
No Visit	1.37	1.97	.76
Regular Checkup	18.75	18.40	19.12
Teeth Cleaned	20.66	19.57	21.77
Teeth Filled/Broken Tooth	13.80	12.24	15.37
Teeth Pulled or Other Surgery	25.96	31.12	20.75
Toothache	3.79	3.83	3.75
Adjustment or Repair of Denture/Bridge Work	5.47	3.24	7.72
Have a Denture Made	5.18	5.43	4.93
For a Prescription	.00	.00	.00
Bleeding Gums or Periodontal Disease	.75	.65	.84
Loose Teeth	.83	.53	1.13
Problems With Wisdom Teeth	.54	.30	.78
Other Reasons	2.21	2.16	2.25
Unknown	.70	.56	.85

Source: National Institute of Dental Research. Oral Health of United States Adults, 1985–1986: National Findings. National Institute of Health Pub. No. 87–2868, Table 8.8, p.91 and Table 8.9, p. 92.

Table 14

Selected dental variables, by private dental health insurance status and race and family income:
United States, 1986

Characteristic	Population	Rate of visits per person per year	Percent of population with visit in past year			Edentulous
RACE	Number in thousands		1 or more visits	3 or more visits	Last visit was check-up	Percent of population
White						
All ages						
Has insurance	75,826	2.7	71.5	19.6	49.2	4.2
No insurance	108,483	1.8	52.0	13.1	31.4	11.4
2–4 years						
Has insurance	3,792	0.7	37.3	3.3	32.5	—
No insurance	4,869	0.7	28.7	2.5	22.9	*0.1
5–17 years						
Has insurance	16,685	3.1	83.0	20.6	62.5	*0.0
No insurance	18,536	2.0	65.2	15.1	46.3	—
18–34 years						
Has insurance	22,374	2.4	70.9	18.5	48.0	*0.3
No insurance	31,374	1.6	54.2	12.9	31.7	0.6
35–54 years						
Has insurance	22,872	2.6	72.1	22.0	46.9	5.5
No insurance	22,469	1.9	54.2	14.7	32.1	9.0
55–64						
Has insurance	7,098	3.3	64.8	20.5	42.1	17.5
No insurance	11,342	2.3	47.9	14.7	25.1	24.1
65 years and over						
Has insurance	3,004	4.1	67.4	22.0	39.1	20.6
No insurance	19,893	2.0	41.5	11.7	22.0	37.4
Black						
All ages						
Has insurance	7,967	2.0	57.6	16.3	36.1	3.3
No insurance	17,523	1.1	38.5	8.9	19.5	8.3
2–4 years						
Has insurance	409	*0.8	31.3	*2.2	24.0	—
No insurance	1,072	*0.4	23.9	*3.1	19.2	—
5–17 years						
Has insurance	2,020	1.8	68.0	15.8	54.2	—
No insurance	4,521	1.2	51.9	11.4	35.1	—
18–34 years						
Has insurance	2,579	2.2	59.4	18.1	34.9	*0.3
No insurance	5,455	1.1	39.2	9.6	16.6	*0.4
35–54 years						
Has insurance	2,268	2.2	57.1	18.7	28.9	3.7
No insurance	3,128	1.0	39.6	9.6	15.1	8.7
55–64						
Has insurance	503	*1.6	39.0	*13.1	20.1	22.9
No insurance	1,400	*1.1	28.6	6.4	10.9	22.8
65 years and over						
Has insurance	187	*2.3	*35.8	*8.0	*13.9	*28.3
No insurance	1,948	*1.0	18.9	5.4	4.5	43.2

Table 14

Selected dental variables, by private dental health insurance status and race and family income:
United States, 1986—Continued

Characteristic	Population	Rate of visits per person per year	Percent of population with visit in past year			Edentulous
RACE	Number in thousands		1 or more visits	3 or more visits	Last visit was check-up	Percent of population
FAMILY INCOME						
Less than \$10,000						
All ages						
Has insurance	3,031	2.9	62.4	15.8	37.5	6.2
No insurance	27,592	1.2	38.8	9.6	19.2	17.4
2-4 years						
Has insurance	114	*4.4	*39.5	*9.6	*24.6	—
No insurance	1,532	*0.5	26.0	*2.3	20.0	*0.3
5-17 years						
Has insurance	528	*3.1	68.6	16.7	49.4	—
No insurance	5,420	1.4	56.0	12.5	35.4	—
18-34 years						
Has insurance	1,619	2.0	70.3	16.1	43.5	—
No insurance	8,281	1.3	47.6	12.2	23.3	*0.6
35-54 years						
Has insurance	304	*3.2	42.4	*12.2	*20.1	*12.5
No insurance	3,582	1.0	36.6	10.4	13.1	13.9
55-64						
Has insurance	175	*6.5	54.9	*22.3	*16.0	*16.0
No insurance	2,457	1.3	25.5	8.1	7.8	38.6
65 years and over						
Has insurance	291	*4.2	41.2	*14.8	*18.9	41.6
No insurance	6,321	1.0	21.8	5.4	7.6	52.3
\$10,000-\$19,999						
All ages						
Has insurance	10,861	1.9	58.6	16.0	35.9	7.1
No insurance	30,520	1.5	44.0	10.9	23.5	13.0
2-4 years						
Has insurance	682	*0.4	27.4	*2.1	23.2	—
No insurance	1,576	*0.6	24.8	*1.6	19.0	—
5-17 years						
Has insurance	2,268	1.8	71.6	17.2	52.8	—
No insurance	5,476	1.7	55.5	12.4	37.3	—
18-34 years						
Has insurance	3,835	1.7	59.1	17.3	33.7	*0.3
No insurance	9,117	1.2	47.0	11.4	23.9	0.9
35-54 years						
Has insurance	2,015	1.9	57.5	18.7	29.5	9.8
No insurance	5,268	1.6	39.9	10.7	17.4	14.2
55-64						
Has insurance	1,139	2.2	47.1	11.0	29.1	28.3
No insurance	2,926	1.6	39.1	11.0	17.0	26.9
65 years and over						
Has insurance	923	3.9	63.6	18.0	34.9	25.6
No insurance	6,158	1.9	40.3	11.4	19.9	38.2

Table 14

Selected dental variables, by private dental health insurance status and race and family income:
United States, 1986—Continued

Characteristic	Population	Rate of visits per person per year	Percent of population with visit in past year			Edentulous
RACE	Number in thousands		1 or more visits	3 or more visits	Last visit was check-up	Percent of population
\$20,000–\$34,999						
All ages						
Has insurance	27,993	2.6	67.2	18.4	44.9	4.2
No insurance	30,003	2.1	56.2	14.1	34.9	6.8
2–4 years						
Has insurance	1,669	*0.6	33.2	*1.9	28.9	—
No insurance	1,399	*0.6	29.5	*2.8	25.7	—
5–17 years						
Has insurance	6,488	2.9	79.1	19.9	58.8	—
No insurance	5,540	2.0	65.1	15.1	46.7	—
18–34 years						
Has insurance	9,115	2.3	68.5	18.5	44.9	*0.5
No insurance	9,642	1.9	55.5	13.4	32.2	*0.6
35–54 years						
Has insurance	7,361	2.5	65.4	19.3	39.7	6.3
No insurance	6,540	1.9	53.7	13.8	33.4	7.7
55–64 years						
Has insurance	2,410	3.7	58.0	19.6	36.7	21.2
No insurance	3,102	2.8	55.9	15.6	29.5	20.3
65 years and over						
Has insurance	949	4.5	71.3	27.3	40.0	16.0
No insurance	3,781	2.8	59.5	17.9	34.9	22.6
\$35,000 or more						
All ages						
Has insurance	36,786	2.9	77.6	21.8	55.3	2.5
No insurance	23,077	2.4	68.5	18.0	46.6	3.9
2–4 years						
Has insurance	1,607	*1.0	46.2	*4.2	40.1	—
No insurance	950	*1.4	38.5	*4.6	31.6	—
5–17 years						
Has insurance	8,303	3.3	88.5	22.2	68.4	*0.0
No insurance	4,378	2.8	81.9	21.0	62.0	—
18–34 years						
Has insurance	9,234	2.9	75.4	19.5	54.1	*0.2
No insurance	6,601	1.9	64.1	14.3	44.1	*0.1
35–54 years						
Has insurance	13,877	2.8	76.8	24.2	51.4	3.7
No insurance	7,037	2.2	69.6	19.1	45.3	4.3
55–64 years						
Has insurance	3,090	3.1	75.2	25.2	50.2	9.9
No insurance	2,292	3.3	68.4	23.2	41.8	10.1
65 years and over						
Has insurance	674	4.3	77.9	23.3	50.9	13.4
No insurance	1,819	3.3	63.7	21.3	38.0	20.0

* Figure does not meet standard of reliability or precision.

Note: Data are based on household interviews of the civilian noninstitutionalized population.

Source: National Center for Health Statistics. S. Jack and B. Bloom, "Use of Dental Services and Dental Health: United States, 1986," Vital and Health Statistics, Series 10, No. 165, Department of Health and Human Services Pub. No. 88-1593, Table 19, pp. 60, 61.

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A. Introduction**1. Overview of Findings**

Limited data from several large-scale community samples suggest that the prevalence of some mental disorders varies by racial and ethnic group. Socioeconomic factors also have a strong influence on the frequency of mental disorders. The population-based community estimates from the five sites included in the Epidemiologic Catchment Area Program (ECA) study of 1980-1982 do not indicate significant differences between Blacks and Whites in overall prevalence of mental disorders, with one exception: Black respondents had higher rates of phobia. However, age-specific racial differences exist in lifetime prevalence for alcohol abuse/dependence; younger Blacks less frequently have histories of alcohol abuse/dependence than younger Whites, whereas middle-aged and older Blacks have higher rates than their White counterparts.

Data from the Los Angeles ECA survey suggest relatively few differences in prevalence of mental disorders between Mexican Americans and non-Hispanic Whites, with the exception of major depressive episodes which were much more prevalent among non-Hispanic Whites. With respect to alcohol consumption, Hispanic males had higher rates of alcohol abuse/dependence than either non-Hispanic White or non-Hispanic Black males in all ECA sites. By contrast, Hispanic women had rates equal to or lower than those of non-Hispanic White women or non-Hispanic Black women

for these alcohol-related disorders.

Data from both the National Drug and Alcohol Treatment Unit Survey (NDATUS) and the Drug Abuse Warning Network (DAWN) suggest that drug abuse/dependence is a particularly serious problem among minorities, especially Blacks, and that cocaine (including crack) has a prominent role in drug-related deaths for both Blacks and Hispanics. Blacks and Hispanics are more heavily represented among drug treatment program admissions than among alcohol treatment program admissions in specialized treatment facilities. Alcoholism and suicide among youths remain significant mental health problems among Native Americans.

As socioeconomic status rises, rates of currently active mental disorders decline within all age categories. Those in the lowest socioeconomic status quartile have a much greater risk of currently having any disorder than those in the upper quartile. Socioeconomic status is also significantly related to rates of schizophrenia and cognitive impairment. Many homeless Americans are mentally ill, and very few receive treatment.

With respect to differences in utilization of mental health facilities, racial minorities are more likely than Whites to be admitted to state and county mental hospitals as inpatients, but are as likely as Whites to be admitted as outpatients. For all types of programs, racial minorities have much

lower rates of admission to private psychiatric facilities than do Whites. Overall, Hispanics are about as likely as non-Hispanic Whites to be admitted to state or county mental hospitals, and less likely to be admitted to any other kinds of facilities, such as private psychiatric hospitals. Both Blacks and Hispanics are less likely than non-Hispanic Whites to use specialized mental health care services, even when they have been diagnosed as having a mental disorder or have defined themselves as having a personal problem.

2. Data Sources and Limitations

Several special issues arise in analyzing data on mental disorders among different racial and ethnic groups, issues which do not pertain to other illnesses.

First, concepts of mental health and mental illness are not as clearly drawn as concepts of somatic or bodily illness. Although organic etiology has clearly been established in some mental diseases, in others, known as functional disorders, it has not. Theorists and practitioners disagree about the dividing line between organic and functional disorders. This problem has particular importance for examining rates of mental disorder among minorities and low income groups, since they are generally exposed to more life events and conditions considered precursors to functional mental disorders than are non-Hispanic Whites and higher income groups.

A related issue is that there are differing views concerning the fundamental sources of mental pathology. One way to

illustrate this is to contrast the medical model of mental problems with the social model. Under the medical model, mental problems are regarded as "diseases" or "disorders" that are "treated" or "cured" by doctors in hospitals and clinics. Accordingly, under this model, health status indicators analogous to those employed for other health problems are considered appropriate for comparing populations on mental health status. Such indicators might include health care services utilization and distributions of diagnostic categories by demographic characteristics. The treatment emphasis in the medical model is on "specific individual disease-oriented therapies." (1)

If we invoke the social model, then primary emphasis is given to socioenvironmental causes of mental disorders. Proponents of this model argue that "mental illnesses are due to interpersonal interactions and not to intra individual processes. Mental deviations arise in social settings, where individuals with interpersonal problems are forced into deviancy. . . ." (1)

Under the social model, incidence and prevalence data are interpreted critically, to take into account possible systematic social biases that might have been involved in generating the data. Utilization is extended to include use of social welfare agencies, crisis centers, and counseling centers. Attention is paid to conditioning influences from the wider socioeconomic environment (e.g., unemployment rates, police interventions), and the

concept of treatment is broadened to include programs and interventions not based exclusively on an individual therapeutic model.

Another set of issues that needs to be raised in any discussion of minorities concerns the possible sources of linguistic and cultural biases in diagnosis and treatment of mental illness. A major question is whether "... differences in levels of psychopathology among various ethnic groups [are] a result of actual differences in incidence and prevalence of psychiatric disorders or ... result from biases in the diagnostic process or the research instruments being used." (2) For example, one obvious concern when studying groups with limited English knowledge is whether standard techniques of translation of diagnostic tools and research instruments provide sufficient guarantees against inaccurate or inappropriate translation from one language to another. (3)

Moreover, beyond purely linguistic considerations, there is evidence that racial and cultural factors may still influence clinical diagnosis, in spite of attempts to make it more objective and rigorous by adoption of standardized operational criteria from the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-III). (4) For example, research has shown that Blacks are more likely than Whites to be diagnosed as having paranoid schizophrenic disorders, and less likely to be diagnosed as having affective disorders, such as depression, although subsequent rediagnosis with trained research teams tends to eliminate these differences. (2) (4) Since different diagnoses result in important differences in treatment

(including medications prescribed, modalities employed, and treatment location), such misdiagnoses can have serious consequences for the individual. Minorities may be particularly vulnerable to such misdiagnosis because of language and cultural differences. (2) (4)

Parallel concerns of possible inappropriate or inaccurate categorization because of cultural bias also arise in connection with other research and evaluation instruments used to assess mental health. They touch on the question of whether definitions of mental illness and related symptoms are truly culture free. (2) (3) When assessments of mental illness are made across racial and cultural lines, it is inappropriate to apply disease categories and diagnostic criteria developed for one population to members of another, without having established the criteria validity for other racial and ethnic groups. (2) (3) This can result in misleading prevalence and incidence estimates.

It is clear that diagnosis and treatment of mental disorders becomes an especially sensitive undertaking when performed across racial and ethnic lines. Unfortunately, there is a relative dearth of minority mental health professionals and others trained to deal with these questions. (3)

Adding to the difficulties inherent in comparing mental health indicators of different economic and racial/ethnic groups is the fact that population-based prevalence data on mental illness are relatively sparse. Consequently, to a large

extent, the sections that follow on the epidemiology of mental disorders rely on data gathered in 1980-1982 under the federal government's Epidemiologic Catchment Area (ECA) Program. This program represented the first large-scale data collection effort providing community-based estimates of the prevalence of specific mental disorders. (5) Although the samples were not designed to be representative of the U.S. as a whole, the ECA survey program has helped to mitigate past problems that have arisen from using utilization statistics to measure the extent to which different groups are affected by mental illness. The use of utilization data is fraught with difficulties given that some groups may not seek or receive care as often as others.

The ECA data were compiled from surveys in five sites: New Haven, Connecticut; Baltimore, Maryland; St. Louis, Missouri; the Piedmont area of North Carolina; and Los Angeles, California. At each site, 3,000 to 5,000 household residents and 400 to 500 residents of institutions were interviewed. A nearly uniform interview protocol was used at all five sites. Its core was the Diagnostic Interview Schedule (DIS), an instrument used by trained interviewers to elicit diagnostic information for a selected set of mental disorders. The diagnostic criteria come from the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-III) of the American Psychiatric Association. (5)

However, ECA data have some notable weaknesses. First, estimates resulting from the ECA may not concur with the diagnosis rates obtained had the subjects been evaluated professionally. In

one study assessing the extent of agreement between diagnoses resulting from the interviewer-administered DIS and diagnoses made by clinicians trained to apply DSM-III criteria, significant differences were found both in one-month prevalence estimates for numerous conditions and in the specific individuals diagnosed with mental illnesses by each method. (6) The ECA methodology is currently under study to resolve these discrepancies. (6) A second difficulty is that "the Diagnostic Interview Schedule omits the great majority of mental disorders enumerated in the DSM-III; thus, many extant psychological diagnoses within the sample of respondents may have been overlooked." (7)

Such difficulties notwithstanding, analyses based on ECA data continue to be published frequently in the psychiatric literature. Aside from studies carried out in limited geographical areas, the ECA is the only source of population-based epidemiologic data on mental illness; therefore, in spite of their limitations, ECA data are presented in this report. Data from other sources are also used wherever possible.

Minority utilization data for substance abuse treatment facilities are available from a variety of sources. One source is National Institute of Mental Health (NIMH) population-based admission rates for inpatient facilities by race/ethnicity and primary diagnosis. Another is the National Hospital Discharge Survey, which gives discharge rates and lengths of stay from short-stay hospitals by mental disorder. There are also several specialized data sources devoted to substance abuse

treatment. The National Drug and Alcoholism Treatment Unit Survey (NDATUS), conducted by the National Institute on Drug Abuse (NIDA) and the National Institute on Alcohol Abuse and Alcoholism (NIAAA), is designed to catalogue all known public and private drug abuse and alcoholism treatment facilities in the United States, regardless of funding source. The NDATUS collects information about types of services, client capacity, client demographic characteristics, and funding requirements and sources.

(8) In general, the organizations specializing in substance abuse treatment are distinct from those included in the NIMH statistics. This chapter begins by considering prevalence rates of mental disorders according to four variables of interest—race, ethnicity, socioeconomic status, and educational attainment. The mental health status of homeless Americans is then briefly discussed. Next, the chapter addresses substance abuse disorders—disorders which merit special attention because of their high frequency in minority and low-income populations. Available data concerning substance abuse are drawn from a wide range of sources, including the Drug Abuse Warning Network (DAWN), the Indian Health Service, and the ECA program. The problem of suicide is then reviewed. Finally, this chapter presents facility utilization data collected by the National Institute of Mental Health and other agencies, as well as data on utilization of drug and alcohol treatment programs from the National Institute on Drug Abuse and the National Institute on Alcohol Abuse and Alcoholism.

B. Epidemiology of Mental Disorders

ECA data generated three types of rates of DIS/DSM-III disorders—total rates, total rates excluding particular disorders, and rates for specific disorders. Total rates describe the proportion of the population which has been diagnosed with any of the selected set of disorders included in the DIS/DSM-III; an individual with more than one disorder is counted only once in the total rate. Total rates excluding particular disorders count only those individuals diagnosed with one or more of a given subset of disorders. A rate for a specific disorder includes all individuals diagnosed with the disorder of interest.

Additionally, the estimates designate the time frame during which a disorder might have been manifest. ECA data reviewed below report lifetime prevalence (LTP) and six-month prevalence. A person is defined with a lifetime prevalence of a mental disorder if he or she has ever experienced the disorder during his/her life span. This provides a measure of the extent to which members of a population have ever been affected by the disorder at some point during their lifetime.

The LTP rate is subject to problems of impaired recall on the part of survey respondents, (9) and to other complexities as an epidemiologic measure. While incidence data would be preferable, psychiatric epidemiology still lacks such data of sufficient quality. (10)

The six-month prevalence rate provides data on persons who have experienced an active episode of the disorder within the six months prior to interview. This rate is considered a measure of current rates of illness. (11) It

is a cross-sectional measure, and, again, is not as useful for assessing risk as an incidence rate would be, inasmuch as psychiatric disorders are often episodic and of variable duration. Relative to the lifetime prevalence, the six-month prevalence rate is less likely to be affected by faulty memory. (9) When compared to lifetime prevalence, six-month prevalence is apt to overrepresent disorders that are long lasting, simply because long-lasting disorders are more likely than short-lived ones to be present at the time of data collection.

1. Race Differences in Prevalence of Mental Disorders

Unfortunately, the ECA data are the only source of population-based epidemiological information on racial differences in mental disorders. Examining lifetime prevalence for specific disorders by race for three ECA sites (New Haven, Baltimore, and St. Louis) reveals only slight racial differences between Blacks and all others (see Table 1). Simple phobia is the only disorder for which there is any replication of racial differences in more than one of these sites. Blacks had significantly higher rates of simple phobia than others in Baltimore (27.6 percent vs. 17.4 percent) and in St. Louis (11.1 percent vs. 5.9 percent). Prevalence of agoraphobia was nearly twice as high for Blacks as for others in Baltimore (13.4 percent vs. 7.2 percent).

2. Ethnic Differences in Prevalence of Mental Disorders

Data on ethnic differences are more readily available, but also rely heavily on the

ECA study. Available data do not readily answer the question of how the distribution of mental health problems in the Hispanic population compares to that in the non-Hispanic population. A recent review of the literature on the epidemiology of mental disorders among Hispanics notes that studies are inconsistent in their findings. Some studies indicate higher prevalence of mental disorders among Hispanics than among non-Hispanics, but others suggest few differences between the two groups. To a great extent, the divergent findings result from the variability of methods employed in the different studies. Results may vary according to such factors as: reliance on population-based rates versus rates of treated persons in the population; the type of prevalence rate used; the national origin group(s) under consideration (e.g., Mexican Americans in Los Angeles versus Puerto Ricans in New Haven); sample size; and the scales and symptom checklists chosen (e.g., the DIS or clinical diagnoses as the basis of assessing mental disorder). (7)

Research using the DIS (e.g., the Epidemiologic Catchment Area) tends to report similar prevalence rates for Hispanics and non-Hispanics for a limited number of DSM-III diagnoses, while data relying upon reports of psychiatric symptoms support the claim that mental disorder is more common in Hispanic populations. (7) To further complicate the picture, one study of Mexican Americans found that the prevalence estimates were strongly affected by the order in which the Epidemiological Studies Depression Scale and interview were administered.

(7) These caveats should be kept in mind when reviewing the data that follow.

ECA data from the Los Angeles site showed a significant difference for only one disorder between Mexican Americans and non-Hispanic Whites—major depressive episode, which was more prevalent among non-Hispanic Whites (see Table 2). Disaggregating the data by sex and age shows that for non-Hispanic White males, the lifetime prevalence rate for any DIS disorder decreases significantly after age 40, to 28.0 percent. This is not the case for Mexican American males, whose rate is 35.7 percent after age 40 (Table 2). Data for females suggest a contrasting pattern in which the effect of age appears to differ more strikingly in the two groups. Non-Hispanic White women under 40 report a 50 percent higher lifetime prevalence rate for any DIS disorder compared to their Mexican American counterparts; among women 40 and over, however, non-Hispanic Whites have rates that are 30 percent lower than those of Mexican Americans (see Table 2). This results from a sharp decline in rates for non-Hispanic White women age 40 and older, but only a modest increase for older Mexican American women.

Examining the six-month prevalence rates, ECA data for Los Angeles again show few differences by ethnicity. (11) With the exception of drug abuse/dependence, discussed below, the only notable difference was that non-Hispanic Whites had lower rates of severe cognitive impairment than did Mexican Americans. However, there may be biases in the instrument used

to measure severe cognitive impairment, stemming from inaccuracies in translation and from differences in cultural background and educational levels among respondents. It should also be noted that non-Hispanic Whites in Los Angeles had rates of severe cognitive impairment lower than the total rates at each of the four other ECA sites. (11) A related consideration in assessing the mental health of Hispanic Americans is the impact of country of origin, which can account for significant intra- and inter-group variation in prevalence of disorders. An apt illustration of this is provided by data from the national Hispanic Health and Nutrition Examination Survey Hispanic (HANES), conducted between 1982 and 1984. (12) Results indicated that Mexican Americans and Cuban Americans had rather similar lifetime, six-month, and one-month prevalence rates of major depressive illness, which were at the lower end of the five-site range for the ECA. By contrast, Puerto Ricans had much higher rates; their six-month prevalence rate was more than twice as great as that of the other two Hispanic groups. (13) Reasons for the substantially higher prevalence of depression among Puerto-Ricans need to be explored further.

3. *Differences in Prevalence of Mental Disorders by Educational Attainment*

Analysis of ECA data suggests an association between lifetime rates of cognitive impairment and level of education. In contrast to the other DIS disorders, cognitive impairment is not a psychiatric diagnosis. It may be defined as "a diminished capacity to know the world" and is found in such

conditions as dementia, mental retardation, aphasia, amnesia, and delirium. (14) Comparing college graduates to all others, the data in three ECA sites (New Haven, Baltimore, and St. Louis) indicated that college graduates showed a significantly lower level of cognitive impairment compared to all others (Table 3). This may partially be an age effect (college graduates tend to be younger). It may also reflect the fact that scores on the Mini-Mental State Examination (MMSE), which was used to evaluate cognitive impairment, are influenced by educational level and I.Q. as well as by dementia, a major cause of cognitive impairment. (9)

With respect to other disorders, college graduates also showed significantly lower lifetime prevalence rates in at least one site for simple phobia, agoraphobia, schizophrenia, schizophreniform disorder, and somatization disorder (Table 3). It should be noted, however, that comparing college graduates with all others may not be sufficiently discriminating to reveal all the important variations in the data.

4. *Differences in Prevalence by Socioeconomic Status*

Data from all five ECA sites reveal that the six-month prevalence rate for any DIS disorder (other than phobias and cognitive impairment) declined as socioeconomic status (SES) rose (See Table 4). SES was measured by an index constructed from a respondent's education, occupation, and household income. For all respondents in the five ECA sites, the actual six-month prevalence of DIS disorder was found to

be 50 percent higher in the two lowest SES quartiles, compared with the highest quartile. In terms of estimated risks, the lowest quartile was found to be 2.9 times as high as the top quartile; corresponding figures for the intermediate quartiles were found to be about two times as high. The prevalence in the next to the top quartile was 40 percent greater. Among subgroups, the lowest quartile for males, age 30–44, was 3 times as high as for the top quartile. For males, age 45–64, the rate was 4 times as high; for females in the 18–29 age group the rate was 3.3 times as high as for the top SES quartile.

With respect to specific disorders, sex and age effects were considerably more important than socioeconomic status in predicting the six-month prevalence of major depression. Prevalence of depression was significantly higher among females than males in all age groups and in all socioeconomic categories. The estimated relative risks for schizophrenia for all age groups and both sexes were found to be 7.8 times as likely in the lowest SES quartile compared with highest SES quartile. The figures for the intermediate quartiles were found to be 3.8 times and 2.7 times as likely, compared with the top SES quartile. Age was also important however, and schizophrenia was most prevalent in the 30–44 age group for both sexes among those who are in the bottom half of the socioeconomic status.

For severe cognitive impairment, both age and SES also had strong effects on six-month prevalence rates. (15) After controlling for age and sex, persons in the lowest SES quartile were

more than 20 times as likely to be severely cognitively impaired as those in the highest quartile. For those in the next-lowest quartile, the estimated risk is 4.9 times as great as for those in the highest quartile. (15) Again, caution must be exercised in interpreting these data because of potential confounding influences on the Mini-Mental State Examination score. (15)

5. *Summary of Prevalence Data*

Summarizing the available data on the prevalence of mental disorders, it appears that education and socioeconomic effects impact prevalence so strongly, compared with differences among racial groups, that SES and educational differences may well explain the differences among racial groups. For schizophrenia, for example, Black/non-Black differences are on the order of 40 percent (Table 1). Yet college/noncollege differences for this condition are on the order of 320 percent (3.2 times as great) (Table 3); the corresponding SES effect for this condition is about 430 percent (4.3 times as great)(Table 4). Whereas lifetime prevalence rates for any DIS disorder show only modest racial and ethnic differences, differences between college-educated and noncollege-educated persons are greater. With respect to six-month prevalence rates, socioeconomic status has a strong effect on the presence of any DIS disorder, and significantly affects six-month prevalence rates for both schizophrenia and severe cognitive impairment.

However, these conclusions must be interpreted cautiously; it may

be that race and socioeconomic status interact in important ways to influence psychological well-being. A 1985 epidemiological survey of 2,115 adults in Florida found that at lower SES levels, Blacks had higher levels of psychological distress (as measured by a variant of the Health Opinion Survey Index) than Whites, while the same was not true at higher SES levels. (16)

In addition, it should be kept in mind that racial comparisons in the ECA data are limited to three ECA sites, while conclusions about ethnicity are based largely on differences between Mexican Americans and non-Hispanic Whites in Los Angeles. The data may therefore possess only limited generality. Moreover, some differences found between Mexican Americans and non-Hispanic Whites may not be due to ethnicity, but to socioeconomic status or level of education inasmuch as these were not controlled in the studies. Additional research to better differentiate mental health prevalence among racial and ethnic minorities would be extremely valuable.

6. *Mental Illness Among the Homeless*

Beginning in the early 1960s, the movement for deinstitutionalization removed state hospitals from their role as primary domiciliaries for the chronically mentally ill but failed to result in effective alternative treatment facilities for them. Consequently, there has been an increasing number of mentally ill persons among the homeless. (17) For obvious reasons, accurate estimates of the size of this group are difficult to obtain; they vary from 10 percent to 50 percent of the total homeless population, depending on the source of

the estimate and the methodology used. In a review of studies of the homeless commissioned by the U.S. Senate, the U.S. General Accounting Office reported that service providers identified between one-fifth and one-third of the homeless as mentally ill, while the application of standardized instruments yielded rates from one-sixth to nearly half. (18) Since estimates of the extent of the total homeless population also vary enormously, from 250,000 to nearly three million, the range of estimates of the number of homeless mentally ill is extremely wide. (18) The National Coalition for the Homeless estimates that roughly 300,000 persons nationwide were homeless and mentally ill. (17) According to the American Psychiatric Association, once they become homeless, only 15 percent to 30 percent of mentally ill persons will receive any kind of mental health assistance. (17) These data illustrate the extreme unmet needs for treatment among one of the least fortunate segments of the American population.

C. *Substance Abuse*

Substance abuse—abuse of alcohol, prescription, or illicit drugs—is a widely recognized public health problem in the United States. Alcohol-related disorders are the more prevalent of the two types; between three and four times as many individuals abuse or are dependent on alcohol compared to other drugs. (19) However, the two dependencies often co-exist. Data from Emergency Room visits and drug related deaths (20) as well as ECA data indicate that between 17

percent and 20 percent of all individuals who have ever had an alcohol disorder also have had another drug disorder and, conversely, between 28 percent and 35 percent of individuals with another drug disorder, have also had an alcohol disorder. (19) (Additional data on co-dependence are reported in Section C.2 below.)

1. *Alcoholism and Alcohol Abusers*

Projections made for the National Institute of Alcohol Abuse and Alcoholism (NIAAA) suggest that the number of both alcoholics and alcohol abusers aged 18 and older in the United States would increase from 17.6 million in 1985 to 18.4 million in 1995, a 4 percent increase. The two categories alcoholism and alcohol abuse are mutually exclusive, alcoholism being the more severe classification. In particular, the demographic trends indicate that a significant increase in the numbers of alcohol abusers and alcoholics is expected to occur in the 35- to 49-year-old age category. (21)

The ECA program is the "first [survey] to assess alcoholism as a disorder in a large general population, using objective definitions that have been agreed upon for use in research and clinical practice by a significant portion of the medical community." (22) Lifetime prevalence of alcoholism in the total ECA sample from all five sites is 13.8 percent. (Hereinafter, alcoholism is defined as a DIS/DSM-III diagnosis of either alcohol abuse or alcohol dependence.) Lifetime prevalence is much higher for men (23.8 percent) than for women (4.7 percent) (see Table 5). In addition, almost 7 percent of the total sample

had at least one alcohol symptom during the past year. (22)

1.1 Race and Ethnic Differences in Alcoholism

Alcohol consumption is related to numerous health problems, particularly unintentional injuries and liver cirrhosis, which are among the ten leading causes of death. Drinking patterns differ according to sex, ethnicity, and some indicators of social and cultural background, as evidenced by findings from household surveys, cause-specific mortality statistics, and treatment populations. This is not to say that the various types of data lead to consistent conclusions about relative rates of alcohol use among sociodemographic subgroups.

The primary source of information on alcohol consumption is household surveys. NIAAA and NIDA surveys are the basis for most of the data reported in this chapter. Other studies are reported to the extent that they provide recent information pertinent to the discussion. This will be followed by a brief discussion of minority alcohol consumption patterns indicated by other data sources. Further information regarding alcohol and other drug abuse is included in Chapter V, Chronic and Acute Disease Conditions (e.g., morbidity and mortality related to chronic diseases associated with alcoholism).

The household survey methodology has important limitations, even if accepted as most appropriate in this context. Perhaps the greatest problem is that groups associated with the behavior under study are less likely than others to be surveyed. In the case of alcohol use, people with the most severe alcohol problems, such as

homeless alcoholics, would not ordinarily be questioned; nor would prisoners and other institutionalized persons, including those in residential treatment programs for alcoholism and other drug abuse. In the case of illicit drug use, those most likely to be addicted are least likely to be included or willing to participate in, such a study. Because minorities are over-represented in these populations, the extent of their alcohol use may be underreported.

A national household survey conducted in 1984 found few differences in the drinking habits among Black, Hispanic, and White men (Table 6). The survey categorized respondents into seven categories of drinking behavior; see Table 6 for drinking category definitions. Black men were somewhat more likely to abstain than either White or Hispanic men—24 percent, 22 percent, and 29 percent for Whites, Hispanics, and Blacks respectively. White men were about 25 percent more likely than Black men, and 12 percent more likely than Hispanic men, to be frequent heavy drinkers, when this is defined as drinking five or more drinks at a sitting once a week or more often. However, when frequent high maximum drinking is considered along with frequent heavy drinking, the three groups show very similar prevalence rates—37 percent, 36 percent, and 33 percent for White, Hispanic, and Black men, respectively.

Women's drinking habits show more variation by race/ethnicity than men's. Table 6 shows that more than 71 percent of Hispanic women abstain or drink only infrequently, compared to 62

percent of Black women and 53 percent of White women. However, at the other extreme of drinking habits, Hispanic and White women are about 50 percent more likely than Black women to be heavier drinkers, as measured by the combined categories of frequent high maximum and frequent heavy drinking.

Data for Hispanic women, as compared with non-Hispanic White women, obtained from the 1985 Alcohol Research Group survey show that the proportion of non-Hispanic White women reporting two or more alcohol-related problems is greater than that for Hispanic women (7 percent vs. 3.5 percent). The age associated with the most alcohol-related problems is also somewhat different for the two groups of women: among non-Hispanic White women the proportion with alcohol-related problems declines sharply after ages 18–29; for Hispanics, the rate of problems plateaus for women 30–59, then drops off in the over-60 population. (23)

When age-related patterns are examined, it appears from this survey that White men's heavy drinking (as measured by combining frequent heavy drinkers and frequent, high maximum drinkers) peaks in the twenties, whereas Black and Hispanic men's heavy drinking peaks in the thirties—among whom half report either frequent heavy or frequent high maximum drinking (Table 6). The later onset and more prolonged pattern of heavy drinking lead to a higher percentage of Black and Hispanic men with chronic alcohol-related diseases. (24)

About one in five White women in the two age groups 18–29 and 30–39 fall into the

heavy drinker category—which indicates that they are generally at least twice as likely to engage in these practices as Black or Hispanic women (Table 6). However, whereas Black women's heavy drinking is fairly stable across the age groups, Hispanic women, beginning with those 40 years old, engage in increased drinking. As a result, at age 40 and over, White women are no longer clearly the heaviest drinkers.

It should be recognized that the patterns reported above, which are based on cross-sectional data rather than longitudinal data, may reflect cohort differences rather than life cycle trends. For Hispanics, the degree of acculturation to U.S. society, for instance, is an important predictor of drinking. A higher degree of acculturation is associated with decreased alcoholic abstention among older men and a higher rate of frequent heavy drinking among younger men. This relationship is stronger and more consistent for Hispanic women. (25)

The 1988 National Survey on Drug Abuse conducted by the National Institute on Drug Abuse (NIDA) suggests that Blacks in all age groups are less likely than Whites and Hispanics in the same age groups to report alcohol use in the past month (Table 7). Data in Tables 6 and 7 suggest that alcohol-related diseases such as liver cirrhosis and esophageal cancer should be less prevalent among Blacks than among the population in general. However, the discussion in Chapter V, Chronic and Acute Disease Conditions, shows this not to be the case. The rate of cirrhosis of the liver among Blacks is double that of

Whites nationwide and in some cities is as high as ten times the rate of Whites. (26) Another disease, hypertension, is boosted by alcohol consumption. Blacks have the highest rates of hypertension in the U.S. These are strong indications that household surveys may underreport alcohol use among minorities.

ECA data from five sites indicate that lifetime, one-year, and one-month prevalence of alcohol abuse and/or dependence are higher for Hispanic men than for Black and non-Hispanic White men except that rates for Black men are higher than those for Hispanic men in the 45-64 age group. (22) The same data show that rates for Hispanic women are generally similar to or lower than those for Black or non-Hispanic White women. According to Rogan, Hispanic cultural sanctions against female "overindulgence," results in underreporting of prevalence of alcoholism among Hispanic women. (27) One-year prevalence rates are highest for Hispanic males for all ages except for those aged 45 to 64, in which the rate is similar to non-Hispanic Whites and about half that of Blacks. (27)

As noted in the previous section on the epidemiology of mental disorders, it is important to examine variations in prevalence rates among Hispanics, not just according to age and sex, but also in relation to country of Hispanic origin, level of acculturation, and immigrant versus U.S.-born status. Data from a subsample of Mexican Americans and non-Hispanic Whites from the Los Angeles site indicate that after controlling for age, sex, and marital status, prevalence of

alcohol abuse/dependence was significantly higher among the more acculturated Mexican Americans and among the U.S.-born compared to immigrant Mexican Americans. Moreover, the U.S.-born were more likely than non-Hispanic Whites and those born in Mexico to have a diagnosis of alcohol abuse/dependence. (28)

Overall, the conclusion that "alcohol abuse is a significant health problem in many Hispanic communities" (27) seems justified. This is especially true for males. Alcohol abuse/alcoholism causes family problems and is manifested in a high percentage of alcohol-related deaths among Mexican Americans. (27)

Other probative indications include the negative effect of economic fluctuations on alcohol abuse. Minorities are more severely affected by economic downturns, specifically, high unemployment rates, which are associated with increased alcohol abuse. (29) Blacks and Hispanics are over-represented among alcohol-related deaths and among those arrested for drunk driving and in alcoholism treatment programs. One study (24) estimates that Blacks comprise 18 percent of the alcohol abuse client population even though they constitute 11 percent of the U.S. population. Finally, another study (30) indicates that Black women have increased rates of heavy drinking and public drinking. These results differ from those obtained by the household surveys described earlier. Alcohol studies that focus exclusively on Black and Hispanic communities are already in progress (27) to determine more accurately (and more consistently) minority drinking patterns.

In considering Black and White differences in alcoholism, it is important to note that compared to the White population, the Black population is relatively young (see Vital Statistics, Chapter II). Thus, higher death rates among Blacks from all causes may differentially reduce the denominator for calculating alcoholism rates, in effect raising the alcoholism rates with age. Nonetheless, the low alcoholism rate among Blacks in the under age 30 group (relative to Whites) may be a more accurate reflection of reality, because death rates have not yet differentially reduced the Black population compared to Whites.

Native Americans experience extremely high rates of alcohol abuse and dependence and their associated problems. It has been estimated that "alcohol abuse and its consequences are nearly twice as pervasive among Native Americans as among any other population group in the U.S." (27) Moreover, differences between males and females in rates of alcohol abuse and alcohol dependence are not as pronounced for Native Americans as for most other groups. Between 1978 and 1980, nearly 25 percent of deaths of female Native Americans could be attributed to alcoholic cirrhosis, a rate 37 times higher than that of their White counterparts. (27)

Table 8 presents age-adjusted rates of alcoholism deaths for Native Americans in Reservation States compared to the total U.S. population from 1969-1985. (Alcoholism deaths in this table for the years 1969-78 are defined as deaths due to alcoholism, alcoholic psychoses, and cirrhosis of

the liver with mention of alcoholism. For 1979 and later years, the definition includes deaths from alcohol dependence, alcoholic psychoses and chronic liver disease and cirrhosis specified as alcoholic.) Table 8 shows a fairly precipitous decline in alcoholism mortality among Native Americans over this period (from 56.6 deaths per 100,000 in 1969 to 26.1 in 1985) and a narrowing of the differential between Native Americans and all others. However, in 1985, Native American rates were still more than four times as high as that of the general population (see Table 8).

A number of biologically- and culturally-based theories have been proposed to explain the exceptionally high rates of alcohol abuse and dependence among Native Americans. (27) As of today, no single theory appears to have gained widespread acceptance.

According to NIAAA, "Of more than 280 diverse American Indian populations, some are characterized by binge drinking followed by periods of sobriety, while other groups remain almost totally abstinent. In still other populations, moderate drinking is the norm. Alcohol problems among American Indians appear to have a strong correlation with economic factors such as unemployment and low income levels and with marital and family instability." (31)

Overall, American Indians' rates of alcohol abuse and alcoholism are several times higher than the general population's, and liver cirrhosis is the fourth leading cause of death. (31)

1.2 Differences in Alcoholism by Socioeconomic Status

As noted previously, racial and/or ethnic differences in mental disorder prevalence rates may also reflect differences in socioeconomic status. In fact, research demonstrates a strong association between prevalence of alcohol abuse/dependence and various indicators of socioeconomic status. NIDA's 1985 household survey suggests that use in the past 30 days generally increases with employment status of the various age groups. (32) Those who are fully employed have a greater tendency to use alcohol. Alcohol use increased with education in all age groups. (32)

When data for all five ECA sites were examined, a consistent trend indicating the inverse relationship between lifetime prevalence of mental disorders and increased levels of education was observed. (22) The ECA showed that among those employed in all age groups, the higher the current income, the lower the one-year prevalence of alcohol abuse/dependence. (22) Respondents regarded as underemployed had higher one-year prevalence rates than those regarded as fully employed. This relationship existed for all three major racial/ethnic groups (non-Hispanic Whites, Blacks, Hispanics). However, underemployed Blacks had much lower one-year prevalence rates than underemployed non-Hispanic Whites or Hispanics. (22) (This may be related to the fact that a comparatively large proportion of Blacks were designated as underemployed.) This finding

also relates to lower alcoholism rates for all 18–29 year-old Blacks compared to Whites and Hispanics. Probably a large proportion of underemployed persons of all racial groups fall into this age group. How the relatively large proportion of underemployed Blacks directly accounts for this difference is not apparent.

One-year prevalence of alcoholism is inversely related to occupational status for men, although this relationship is not consistent for women. (22)

After controlling for age and sex, ECA measures of six-month prevalence show that those in the lowest, second, and third SES quartile were roughly three and one half times as likely, more than twice as likely, and roughly one and one-half times as likely, respectively, as those in the highest quartile to abuse or be dependent on alcohol (see Table 4). Six-month prevalence of alcohol abuse or dependence is not as strongly related to socioeconomic status compared to age and sex.

2. Abuse of Illicit and Prescription Drugs

Although not nearly as prevalent as alcohol abuse/dependence, abuse of and dependence on other drugs—both illicit and prescription—is a serious health problem with devastating impact on individuals and families, as well as widespread societal repercussions, including related organized crime, homicides, and adverse economic impact on the communities hardest hit, especially in inner-city minority areas. Recent data show a high frequency of co-dependencies among people with substance abuse problems. Data from the U.S.

Alcohol Epidemiologic Data System indicate that "from 1979 through 1984, 24 percent of discharges [from short-stay hospitals] with first-listed diagnoses for drug dependence and 16 percent of discharges with first-listed diagnoses of non-dependent abuse of drugs (other than alcohol) were concomitant with an alcohol-related diagnosis." (19)

This section on drug abuse relies on 1988 emergency room and coroner data from the Drug Abuse Warning Network (DAWN) showing racial/ethnic variations in drug abuse episodes, drug-related deaths, and drug mentions.

2.1 Race and Ethnic Differences in Drug Abuse/Dependence

NIDA's National Household Survey on Drug Abuse (32) is frequently used as a source of estimates of rates of illicit drug use by race/ethnicity, educational attainment, and other characteristics. However, household surveys do not produce the basic and essential information necessary to understand the rate and extent of drug abuse among ethnic and racial minorities and/or low-income groups. As with alcohol, drug use data from household interviews are likely to contain underestimates which vary by sociodemographic group. Thus, to obtain a fuller understanding, these data are supplemented with other data sources, such as data on hospitalizations for drug problems. Among the measures available from the NIDA survey are indicators of recent use—that is, use in the past year—and of current use—use in the past month. It should be noted that estimates of use in the past year do not exclude the

proportion reporting use in the past month. The 1988 survey results for use of any kind of illicit drug or illicit use of legal drugs (except cigarettes and alcohol) suggested similar recent and current use among Whites, Blacks, and Hispanics (Table 9). When examined by sex, the data again suggested that there were no racial/ethnic differences in the use of illicit drugs within the past year or within the past month. In general, less than one in seven males used an illicit drug in the past year, as compared to approximately one in ten females (See Table 9).

Table 10 shows the thirty-day and lifetime prevalence, as of 1988, by race/ethnicity and sex of the major classes of illicitly used drugs other than marijuana. Levels of use in the various drug categories are similarly low for Whites, Blacks, and Hispanics. Overall, Whites are more likely than Blacks or Hispanics to be current users of inhalants, while Blacks and Hispanics are more likely than Whites to be current users of cocaine and crack. Examining the lifetime (i.e., ever used) prevalence of illicit drugs indicates that Blacks are significantly more likely to have used crack and heroin compared to Whites. Within the sex groups, very few of the racial/ethnic differences are statistically significant with the important exception of crack. For both sexes, current and ever usage of crack is higher among minorities. These findings are consistent with earlier household surveys showing that overall drug use is not higher among minorities. (33)

It must be pointed out again that there are serious methodologic problems with the household survey in underreporting minority substance abuse. There are

other indications that overall drug use and its consequences are more severely felt by minorities. The prevalence of drug use is generally higher in urban areas than in suburban or rural areas. Thus, since Blacks are more likely to live in the inner cities, (34) they are more at risk for drug abuse. Estimates from household surveys do not include potentially high-risk subgroups such as prison inmates, persons living in welfare hotels, and homeless persons. Studies have shown these populations are disproportionately Black and have high rates of drug abuse. (35) Data available from hospital emergency rooms and drug abuse programs indicate that heroin use is a more serious problem among Blacks and Hispanics than among Whites. (33) In general, data of this sort indicate that minorities are more likely to be involved with more dangerous drugs such as heroin, cocaine, and PCP. The route used to administer drugs is different across racial lines. Blacks, and to a lesser extent Hispanics, seem more likely to use more dangerous routes of cocaine administration (i.e., injection or freebasing) and to use several drugs in combination with potentially fatal consequences. Among other medical and psychological consequences, intravenous drug use is associated with the spread of the AIDS virus. (This is discussed further in Chapter VII, Human Immunodeficiency Virus Infection.)

Finally, the 1987 age-adjusted mortality rates from drug-related causes for Blacks was 2.2 times that of Whites (see Table 11). The category "drug-related

causes" includes deaths from drug psychoses, dependent and independent drug use, accidental and deliberate poisoning, and suicide; it excludes homicide and other causes indirectly related to drug use. Black age-adjusted death rates from drug-related causes have doubled from 1979 to 1987 (3.7 to 7.4 per 100,000), while rates for Whites have remained relatively stable within the same time period (3.1 to 3.4 per 100,000) (see Table 11).

National data on the extent of illicit drug use among American Indians and Asian and Pacific Islanders are not available. (36) However, data from a 1980-81 survey of Indian high school seniors, when compared with data from another source (NIDA's 1981 Annual Survey of American High School Seniors), showed higher lifetime prevalence among Indians for 10 of the 12 substance categories studied. Lifetime prevalence differences were particularly high for marijuana and inhalants. (33)

The Drug Abuse Warning Network (DAWN) reports on drug abuse-related episodes from 738 hospital emergency rooms in 21 metropolitan areas, and drug-related deaths from 87 medical examiners in 27 metropolitan areas. (20) Although the data are limited to certain locales where racial minorities tend to be overrepresented, and the cases are restricted to reported medical crisis episodes only, the DAWN tracking system is a useful and current source of information because it may somewhat balance the underreporting of illicit drug use in household surveys.

The 1988 DAWN data indicate heavy Black representation in all drug-abuse categories examined; 39.3 percent of reported drug

abuse episodes involved Blacks, 0.2 percent involved American Indians/Alaskan Natives and 0.7 percent involved Asians and Pacific Islanders. (20) Among the drug-related deaths, Blacks accounted for 29.6 percent of all deaths, American Indian/Alaskan Natives accounted for 0.1 percent and Asians and Pacific Islanders for 0.5 percent. (20)

Table 12 indicates racial and ethnic differences in the type of drug implicated in emergency room episodes in 1988. For alcohol in combination with other drugs, 44.5 percent of emergency room drug abuse related episodes involved non-Hispanic Whites, 37.2 percent involved Blacks, and 9.2 percent involved Hispanics. (It should be noted that more than one drug or drug combination can be mentioned for any given episode.) By contrast, for cocaine, 26.8 percent of emergency room episodes involved non-Hispanic Whites, but fully 56.8 percent involved Blacks, and only 8.8 percent involved Hispanics (see Table 12). For heroin/morphine, emergency room drug abuse related episodes, 39.0 percent involved non-Hispanic Whites, 40.7 percent involved Blacks, and 13.1 percent involved Hispanics. Finally, for marijuana/hashish 40.4 percent of these emergency room episodes involved non-Hispanic Whites, 43.7 percent involved Blacks, and 8.1 percent involved Hispanics. Thus, it appears that in 1988, for every category of drugs—alcohol-in-combination with other drugs, cocaine, heroin/morphine and marijuana/hashish—Blacks and Hispanics were overrepresented in emergency room drug abuse related episodes. More

specifically, Blacks were twice and almost three times as likely to be represented in heroin/morphine and cocaine emergency room episodes, respectively, compared to their representation in the population at large. Hispanics are particularly overrepresented in heroin/morphine episodes.

Examining ECA data on the other hand, indicates that overall substance abuse rates do not differ much between men of different ethnicity (27.8 percent vs. 32.9 percent for non-Hispanic Whites and Mexican Americans, respectively, see Table 2). But Mexican Americans abused alcohol 5.5 times more frequently than other drugs, whereas non-Hispanic White men were less than one and one-half times as likely to abuse either. (20) Rates of drug abuse/dependence for non-Hispanic Whites are 1.5 to 7 times as high as for Mexican Americans, depending upon sex and age group (Table 2).

Additional light can be shed on the question of drug abuse and ethnicity by examining variations in drug abuse/dependence among Los Angeles Mexican Americans according to level of acculturation and U.S.-born versus immigrant status. The same findings obtained for alcohol abuse and dependence were obtained for drug abuse and dependence; after controlling for age, sex, and marital status, prevalence of drug-abuse/dependence was positively related to level of acculturation and was associated with being U.S. born. Moreover, immigrant Mexican Americans were less likely than non-Hispanic Whites to have a diagnosis of drug abuse/dependence compared to non-Hispanic Whites. However, within the immigrant group, prevalence

of drug abuse/dependence was higher among the more acculturated. (28) Thus, without effective interventions, rates of drug abuse/dependence among Mexican Americans may well increase with increasing levels of acculturation as larger proportions of this population are born in this country.

2.2 Differences in Drug Abuse by Socioeconomic Status

National data which could be used to determine whether or not there are socioeconomic differences in drug abuse are severely lacking. In fact, only the national survey of high school seniors provides useful data and it is minimal.

The use of illicit drugs by American high school seniors differs by socioeconomic status, as measured by the rate of use for seniors expecting to attend college versus those who are not. In every year between 1976 and 1987, those planning to attend college reported some use of illicit drugs in the past year less frequently than others. (37) (The difference would be even larger if high school dropouts were included in the latter group.) The difference in heavy use of marijuana by students planning to attend college is especially large when compared with those not planning to attend. When heavy use is defined as the percent reporting daily use in the previous 30 days, 1987 seniors not planning to attend college were more than twice as likely to report heavy use of marijuana as others (5.2 percent vs. 2.0 percent). (37) This difference appears to persist into early adulthood; when college students were compared with high school graduates of the same age, the percentages were 2.3 percent vs. 4.6 percent. Any

use of cocaine within the past thirty days also differed strongly among 1987 seniors with and without college plans: 3.6 percent vs. 5.3 percent, respectively.

D. Suicide

Among the mental disorders, alcoholism as well as affective disorders are associated with suicide. Suicide is the eighth leading cause of death in the United States, but the second leading cause of death among persons 15 to 24 years of age. In the general population as well as in most racial and ethnic minority groups, suicide rates are higher for males than females.

1. Race Differences in Suicide

In 1986, suicide rates for Whites were consistently higher than suicide rates for Blacks within all age categories. The age-adjusted overall rate for White males was 20.5 per 100,000 and for Black males 11.5 per 100,000; the corresponding rates for females were 5.4 per 100,000 and 2.4 per 100,000 (see Table 13).

The two racial groups also differed in 1986 in the age group that exhibits the highest suicide rates: for White males it is the 75 and older groups, for Black males the 25 to 34 group, for White females the 45 to 54 group, and for Black females the 45 to 64 age groups (see Table 13). The rate for older White males (75 and older) is 3.7 times as high as the rate for older Black males, and 4.9 times as high as the overall crude rate for all Black males. Suicide was the ninth leading cause of death for Native Americans of all ages during the period 1984–86. (38) Table 14 shows suicide

mortality rates by age for Native Americans during 1984–1986 compared to those for the entire U.S. population in 1985. Until the age of 45, Native Americans have higher suicide rates than Whites, and the population as a whole. Differences are particularly significant for the 5- to 14- and 15- to 24-year-old age groups; rates are at least twice as high for both sexes. Native American females five to 14 years old are nearly three times as likely to have committed suicide as other American girls in that age group. But in the 45 to 64 age groups, White females have higher suicide rates. The rates for Native American males 25–34 years of age are also nearly twice as high as those of other American young men.

A variety of explanations have been offered for the high rate of suicide among adolescent and young adult Native Americans. Most of these point to conflicting pressures between traditional Indian culture and the wider society which become particularly acute at this stage of life. (39) It should be noted, however, that there are great cultural differences among tribal groups, and not all Native Americans show high suicide rates. (40)

Data on ethnic differences in suicide rates are scarce. However, 1987 mortality data for 18 reporting states and the District of Columbia show that suicide is the seventh leading cause of death for Hispanics 25–44 years of age. (41) For Whites in the same reporting states, suicide was the fourth leading cause of death. (41)

E. Utilization of Mental Health Services

Because of the paucity of epidemiologic data related to minorities' mental health, this chapter includes a more

detailed discussion of service utilization than do other chapters in this report.

The 1960s, 1970s, and early 1980s were a time of considerable restructuring of the organized mental health care sector. Thus, it is worthwhile to begin the discussion of utilization differences by briefly reviewing these changes and summarizing the salient characteristics of the organizations that provide mental health services. Unless otherwise noted, the data used are from the National Institute of Mental Health (NIMH) inventories.

1. Overview of Changes in the Mental Health Delivery System

Over the past 15 years, there has been a notable restructuring of the types and locations of mental health services being delivered. At least in part, these changes reflect the movement of the 1960s and 1970s to deinstitutionalize patients in state and county mental hospitals. The number of private mental health facilities has risen sharply. Table 15 shows the numbers of all mental health facilities by service setting for the period 1970–1984. The number of facilities increased by almost 50 percent during the period of 1970 to 1984, and 19 percent between 1980 and 1984. From 1970 to 1984, the number of outpatient facilities increased the most, followed by inpatient, and then day treatment facilities. However, growth in the reported number of day treatment programs is partly due to a 1984 redefinition of day care to include previously excluded day treatment programs. (42)

A recent Congressional report estimated that, in 1988,

75 percent of all services to persons who suffered from chronic mental illness were provided in the community and 75 percent of those treated as inpatients in 1955 were treated as outpatients in 1988. (43) The deinstitutionalization movement was spurred by a desire to improve conditions for mentally ill persons by encouraging their integration into the community. However, there remains a serious shortage of community-based services that address the needs of disadvantaged persons. In recent years, states have begun to pass legislation to coordinate mental health facilities, but significant problems remain. (43)

2. Utilization of Mental Health Facilities

NIMH statistics pertaining to minorities include population-based admission rates and percentage distributions of admissions by race and Hispanic origin, according to facility type and primary diagnosis. The Indian Health Service (IHS) also has discharge data from IHS hospitals and hospitals under contract to the IHS. Additionally, the NCHS National Hospital Discharge Survey provides breakdowns by population group and diagnosis. These tabulations are discussed in the remainder of this section.

However, it should be noted that treatment data may reflect the selection biases of the patients and health care service providers, and thus may not be an accurate reflection of the mental health disorders of minorities and low income groups. In contrast to population-based estimates, treatment data include only those persons who sought and obtained

care. Access to care is mediated by insurance status; even for those with private insurance, mental illness tends to be covered in a limited manner and the attendant copayments are higher than for other illnesses. (44) In addition, both the Medicaid and Medicare programs impose fairly rigid restrictions on mental health benefits. Medicaid excludes coverage for services to persons 22 to 64 years of age in psychiatric hospitals and other facilities for the mentally ill, and provides limited coverage of home and community-based mental services. There are also significant variations in coverage from state to state. (45) Although the Omnibus Budget Reconciliation Act (OBRA) of 1987 raised the amount Medicare will reimburse beneficiaries for outpatient mental health services, a bias toward reimbursement for inpatient treatment still remains, as do restrictions on reimbursement of non-medical personnel such as psychologists or therapists. (46)

In addition, for a variety of reasons, many people seek and receive treatment for mental disorders in the general health sector and thus do not appear in the utilization data from NIMH. Some individuals may be more likely to seek care for mental health problems outside the formal mental health care system, turning to relatives, neighbors, members of the clergy, folk healers, and others in times of stress. The degree to which race or ethnicity plays a predominant role in such treatment-seeking behavior is not clear. Other factors such as income, education, and urban versus rural residence may be equally important as or more important than race or ethnicity.

Estimates from the 1981 ECA East Baltimore survey suggest that mental health facilities are meeting the needs of Blacks less frequently than those of Whites—53 percent of minorities (predominantly Blacks in this sample) had unmet mental health needs in contrast to 44 percent of Whites. (47) One study of help-seeking behavior in a national sample of Black Americans found that only 9 percent of Black respondents with a self-reported serious personal problem sought help within the mental health sector. The 49 percent who used professional help more often turned to either the traditional health care sector or to ministers. The vast majority (87 percent) turned to at least one member of their informal social network. In spite of the different definitions of mental distress in each study, it is nevertheless clear that the assessment of unmet need appears more complex when both formal and informal helping resources are taken into account. (48)

2.1 Inpatient Utilization by Race

NIMH data on inpatient admissions in 1986 indicated an overrepresentation of racial minority groups (classified in a single category) of both sexes in all facilities, with the exception of private psychiatric hospitals (see Table 16). Even in private psychiatric hospitals, minority males had a higher rate of representation than White males. For all inpatient services, minority males were represented at a rate more than twice that of White males (1440.6 per 100,000 compared to 676.8 per 100,000, respectively);

minority females were represented at a rate nearly one and one-half times that of White females (745.8 per 100,000 compared to 515.1 per 100,000, respectively) (see Table 16).

Table 17 indicates that the overall median length of stay in an inpatient mental health facility for both sexes combined was one day less for minorities than for Whites. The limitations set by Medicaid on reimbursable days have been found to lead to shorter lengths of stay in psychiatric units of general hospitals. (49) Disaggregation by sex indicated that minority males had a median length of stay one day longer than White males, while minority females had a two-day shorter median length of stay than White females. In all types of mental health facilities, other than state facilities and multistate organizations, minorities had shorter median lengths of stay compared with Whites (see Table 17). Data from the National Hospital Discharge Survey provides evidence of different utilization patterns by Whites and by minorities for the period 1982–1986 (see Table 18). Discharge rates for mental disorders for short-stay hospitals declined slightly for Whites and increased for minorities over this time period. For psychoses, the discharge rate increased for both Whites and minorities. Minorities had much higher utilization rates for mental disorders and alcoholism in all four years, but shorter lengths of stay. Their discharge rate for psychoses was somewhat higher again with shorter length of stay (except for 1985). Only for neurotic and personality disorders were discharge rates for Whites higher than for minorities.

For Native Americans, discharges from Indian Health

Service and contract general hospitals for mental disorders have declined in the past decade (see Table 19). Mental disorders ranked ninth among eleven causes for hospitalization in Indian Health Service and contract general hospitals in 1987, accounting for 4.2 percent of all discharges. (50) In contrast, mental disorders in 1976 ranked fifth of eleven causes for hospitalization, and accounted for 6.5 percent of all discharges. (51)

Table 20 presents inpatient discharges for mental diagnoses for IHS and IHS contract hospitals by diagnostic categories and age group for fiscal year 1988. Although these data are not strictly equivalent to those presented in Table 18, they are appropriate for rough comparisons. Excluding diagnoses for alcoholism and drug abuse, considered below, there are striking differences between Native Americans and Whites and between Native Americans and Blacks. Looking at percentage distributions of different diagnostic categories, neurotic disorders are more prevalent and psychoses/schizophrenia much less prevalent among Native Americans than either Whites or minorities as a whole.

2.2 Inpatient Utilization by Ethnicity

The most recent year for which data on utilization of inpatient mental health facilities by Hispanics is available is 1980. For Hispanics, rates of admissions to state and county mental hospitals in most age categories are not markedly different than those for non-Hispanic Whites (see Table 21). For private psychiatric hospitals, non-

federal general hospitals, and VA medical centers, Hispanics have much lower admission rates for inpatient psychiatric services. According to one study, Hispanics are much less likely to be admitted to inpatient psychiatric services at VA medical centers. (51) Overall, Table 21 indicates that Hispanics appear to be especially underrepresented in private and VA mental health treatment centers.

Population-based comparisons of Mexican Americans and non-Hispanic Whites in the Los Angeles ECA catchment area tend to support the finding that Mexican Americans underutilize formal mental health services. Among all respondents, Mexican Americans were significantly less likely to use specialized mental health care compared to non-Hispanic Whites. (52) Among those with a mental health problem, Los Angeles Mexican Americans were as likely as non-Hispanic Whites to have visited a general medical provider, but significantly less likely to have visited a mental health specialist. (52) Similarly, for those with a recent DIS/DSM-III diagnosis, Mexican Americans were much less likely to have visited a mental health specialist compared to non-Hispanic Whites (48 percent vs. 71 percent, respectively) and only half as likely to have visited a general health care practitioner for mental health reasons.

Less acculturated Mexican Americans underutilize mental health services to a greater extent than the more acculturated. (53) This pattern is related to low socioeconomic status, low levels of insurance coverage, linguistic barriers that impede access to services, and cultural barriers that

stigmatize persons using these services. (54) Again, it should be reemphasized that many Hispanics make use of informal resources in coping with psychological problems.

2.3 Outpatient Utilization by Race

Table 22 indicates that racial minorities of both sexes have similar overall rates of admission to outpatient facilities compared to Whites. However, when the data are disaggregated by sex, minority males have higher outpatient admission rates compared to White males while minority females have lower rates compared to White females.

F. Utilization of Substance Abuse Treatment Facilities

1. Utilization of Alcohol Treatment Services by Race/Ethnicity

Although participation in the National Drug and Alcoholism Treatment Unit Survey (NDATUS) was purely voluntary, more than three-fourths of all forms mailed to various programs were returned. (NDATUS data may be limited in that private programs are less likely than public programs to respond.) (8) Nevertheless, a total of 8,690 facilities reported: 2,132 alcohol-only programs, 1,198 drug-only programs, and 5,360 combined alcohol and drug treatment programs. Of the 8,690 facilities surveyed in 1987, 6,866 provided treatment, 5,211 delivered preventive and educational services, and 3,844 delivered "other" services. In the treatment facilities, drug abuse clients accounted for 42.1 percent and alcoholism clients for 57.9 percent of the total clients served. (8)

According to the results of the 1987 NDATUS survey of all known public and private substance abuse treatment programs (Table 23), non-Hispanic Whites comprised 62.0 percent of all clients in treatment, and 67.4 percent of all alcohol clients. Blacks comprised 18.3 percent of all clients, and 14.6 percent of all alcohol clients. Hispanics accounted for 11.8 percent of all clients and 9.3 percent of all alcohol clients (see Table 23).

NDATUS data are also disaggregated according to types of treatment received. For alcoholism clients, Whites and Asian/Pacific Islanders are somewhat overrepresented among those obtaining rehabilitation and recovery services, defined as a planned program of professionally directed evaluation, care, and treatment. (8) Blacks and Native American/Alaskan Natives are heavily overrepresented among clients in social detoxification programs. These are programs in which the effects of alcohol are systematically reduced or eliminated on a drug-free basis; they are generally located in a specialized non-medical facility with physician services available as needed. (8) Blacks are also overrepresented in medical detoxification programs. These programs involve the use of medication under the supervision of medical personnel, and are generally located in a hospital or other 24-hour care facility.

There is some indication that in recent years, substance abuse treatment centers have begun to offer more programs tailored to the specific needs of minority populations. The pressing need for culturally relevant mental health services was discussed in the introduction

to this chapter. Between 1982 and 1984, according to data from NDATUS for 1982 and from the National Alcoholism and Drug Abuse Program Inventory for 1984, there was a 43.3 percent increase in specialized programs for Blacks offered by alcoholism treatment programs (from 335 to 480), and a 58 percent increase in such programs for Hispanics (from 381 to 602).

However, there are concerns that changes in alcoholism treatment services during the past decade may have actually decreased access to treatment for low income and minority groups because the total number of facilities to which they would have access decreased. Between 1980 and 1982, NDATUS reported that there was a 5.3 percent decline in programs that served inner city populations. (55) During that same period there was an 8 percent decline in numbers of alcoholism treatment units attached to community mental health centers, a 17.7 percent decline in treatment units in freestanding facilities, and a 12.8 percent decline in treatment units in correctional facilities. (55) There has also

been a decrease in publicly funded treatment units; for example, between 1979 and 1982, there was a 9 percent decline in publicly funded units: 9.9 percent for state and local programs and 4.7 percent for federal units, including VA facilities. Given that minorities are more likely to use such facilities, it is reasonable to assume that they were disproportionately and adversely affected.

Concomitant with the decline in the numbers of publicly financed treatment programs was the growth in the numbers of proprietary programs on a for-profit basis. The emergence of an increased number of for-profit treatment centers is probably a response to the increasing availability of third-party payments. (55) The 1987 NDATUS survey shows an increasing trend toward a greater percent of alcohol (and drug) clients served by private for-profit facilities. (8) To the extent that minorities are less likely to have private insurance coverage, this trend has probably also negatively affected minorities and low income groups.

2. Drug Abuse Treatment Facility Utilization by Race/Ethnicity

Both NDATUS and NASADAD (National Association of State Alcohol and Drug Abuse Directors) (56) suggest a relative overrepresentation of minorities in the particular treatment programs surveyed compared to all treatment programs. According to NDATUS data, non-Hispanic Whites comprise 62.0 percent of all clients, while comprising only 54.5 percent of all drug clients. Blacks comprise 18.3 percent of all clients, but 23.5 percent of all drug clients and Hispanics comprise 11.8 percent of all clients, but 15.1 percent of all drug clients (see Table 23). NASADAD reports that in 1987, non-Hispanic Whites comprised only 48.3 percent of all drug clients, while Blacks comprised 20.7 percent, Hispanics 9.8 percent, Asian or Pacific Islanders 0.4 percent and Native Americans 0.9 percent. (56)

However, this overrepresentation by minorities does not necessarily mean that minority treatment needs are being adequately met. First, it

should be noted that these data reflect public treatment programs more than private programs. Minorities may be underrepresented in private programs and/or in programs not specifically oriented toward substance abuse treatment. Second, as indicated above, the specific drugs that are abused differ by race/ethnicity, suggesting differential treatment needs.

In drug programs, both Blacks and Hispanics are overrepresented in maintenance programs (see Table 24), in which methadone or other approved drugs are administered at relatively stable dosage levels as a substitute for opiates (usually heroin). Whites are overrepresented in detoxification programs, in which a timed planned withdrawal is supported by use of a prescribed medication. Whites are also overrepresented in drug-free programs, in which the primary treatment method is counseling and not pharmacotherapy (see Table 24).

Table 1

Lifetime prevalence of DSM-III* diagnoses by race

	New Haven, Conn. %		Baltimore %		St. Louis %	
	Black N=334	NonBlack N=2,708	Black N=1,182	NonBlack N=2,299	Black N=1,158	NonBlack N=1,846
Simple phobia	5.1 (1.6)	6.4 (0.5)	27.6 (1.4)	17.4 (1.1)+	11.1 (1.2)	5.9 (0.7)+
Agoraphobia	4.4 (1.0)	3.4 (0.3)	13.4 (1.2)	7.2 (0.7)+	4.4 (0.7)	4.1 (0.6)
Drug abuse/dependence	6.4 (1.3)	5.7 (0.5)	7.3 (0.9)	4.9 (0.5)±	6.4 (1.0)	5.3 (0.7)
Cognitive impairment	1.9 (0.6)	1.3 (0.2)	1.8 (0.3)	1.1 (0.2)	2.2 (0.3)	0.7 (0.2)+
Schizophrenia	2.1 (0.7)	1.9 (0.3)	2.4 (0.5)	1.2 (0.2)±	1.0 (0.3)	1.0 (0.3)
Manic episode	1.0 (0.5)	1.2 (0.2)	0.5 (0.2)	0.7 (0.2)	2.5 (0.8)	0.7 (0.2)±
Somatization	0.7 (0.4)	0.1 (0.0)	0.1 (0.1)	0.1 (0.1)	0.4 (0.2)	0.1 (0.1)
Major depressive episode	5.7 (1.5)	6.8 (0.5)	3.7 (0.7)	3.8 (0.4)	4.9 (0.8)	5.7 (0.7)
Anorexia nervosa	0.0 (0.0)	0.1 (0.0)	0.0 (0.0)	0.1 (0.1)	0.0 (0.0)	0.1 (0.1)
Schizophreniform disorder	0.0 (0.0)	0.1 (0.1)	0.4 (0.2)	0.3 (0.1)	0.0 (0.0)	0.1 (0.1)
Dysthymia	3.3 (1.1)	3.2 (0.4)	1.8 (0.5)	2.3 (0.3)	3.6 (0.7)	3.9 (0.5)
Panic	1.3 (0.6)	1.5 (0.2)	1.6 (0.4)	1.3 (0.2)	1.1 (0.3)	1.6 (0.4)
Obsessive-compulsive	2.7 (0.8)	2.6 (0.3)	2.7 (0.5)	3.1 (0.4)	1.5 (0.4)	2.0 (0.4)
Alcohol abuse/dependence	14.3 (2.4)	11.1 (0.6)	14.6 (1.1)	13.2 (0.8)	14.7 (1.6)	16.0 (1.1)
Antisocial personality	1.7 (0.6)	2.1 (0.3)	2.3 (0.5)	2.7 (0.4)	3.9 (0.9)	3.1 (0.5)
Any of the covered diagnoses	30.5 (3.1)	28.6 (1.0)	45.1 (1.8)	34.7 (1.1)+	34.9 (1.9)	30.1 (1.4)±

* Diagnostic and Statistical Manual of Mental Disorders.

Note: Numbers in parentheses are standard errors.

+ P less than .001

± P less than .05

Source: Lee N. Robins, John E. Helzer, Myrna Weissman, Helen Orvaschel, Ernest Gruenberg, Jack Burke, Darrel A. Regier, "Lifetime Prevalence of Specific Psychiatric Disorders in Three Sites," Archives of General Psychiatry, Vol. 41, Oct 1984, p. 956.

Table 2

Mexican-American and non-Hispanic White lifetime DIS/DSM III* prevalence rates by age and sex

	18-39 yr		40+ yr		Total	
	Male ¹	Female ²	Male ³	Female ⁴	Male ⁵	Female ⁶
Any DIS disorder ⁷						
Mexican Americans	41.8 (2.6)	27.8 (2.9)	35.7 (3.6)	32.9 (3.2)	39.5 (2.2)	30.0 (2.2)
Non-Hispanic Whites	42.7 (3.3)	42.7 (3.5)	28.0 (2.5)	24.0 (2.7)	36.5 (2.3)	32.8 (2.3)
Substance user disorders						
Mexican Americans	36.5 (2.7)	6.8 (1.3)	28.3 (3.2)	4.1 (1.2)	32.9 (2.2)	5.6 (0.9)
Non-Hispanic Whites	33.8 (2.5)	22.9 (2.6)	21.5 (2.9)	7.2 (1.4)	27.8 (2.1)	14.6 (1.4)
Alcohol abuse/dependence						
Mexican Americans	33.0 (2.4)	5.2 (1.3)	28.5 (3.3)	3.9 (1.2)	31.3 (2.1)	4.6 (0.9)
Non-Hispanic Whites	21.6 (2.0)	10.7 (1.7)	20.4 (3.0)	6.3 (1.5)	21.0 (1.8)	8.4 (1.1)
Drug abuse/dependence						
Mexican Americans	9.0 (1.4)	3.7 (0.8)	0.5 (0.5)	1.1 (0.2)	5.9 (1.0)	2.6 (0.5)
Non-Hispanic Whites	24.7 (2.3)	18.7 (2.5)	3.9 (1.2)	1.6 (0.7)	14.6 (1.5)	9.7 (1.3)

Table 2

Mexican-American and non-Hispanic White lifetime DIS/DSM III* prevalence rates by age and sex—Continued

	18–39 yr		40+ yr		Total	
	Male ¹	Female ²	Male ³	Female ⁴	Male ⁵	Female ⁶
Schizophrenia/Schizophreniform disorders						
Mexican Americans	0.5 (0.4)	0.8 (0.5)	0	0.4 (0.2)	0.3 (0.3)	0.6 (0.3)
Non-Hispanic Whites	1.2 (0.7)	1.9 (0.7)	0	0.4 (0.3)	0.6 (0.4)	1.1 (0.3)
Schizophrenia						
Mexican Americans	0.5 (0.4)	0.6 (0.4)	0	0.4 (0.2)	0.3 (0.3)	0.5 (0.3)
Non-Hispanic Whites	1.2 (0.7)	1.3 (0.6)	0	0.4 (0.3)	0.6 (0.4)	0.8 (0.3)
Schizophreniform disorder						
Mexican Americans	0	0.2 (0.2)	0	0	0	0.1 (0.1)
Non-Hispanic Whites	0	0.6 (0.3)	0	0	0	0.3 (0.2)
Affective disorders						
Mexican Americans	5.5 (1.5)	9.1 (1.7)	4.8 (1.6)	12.3 (2.4)	5.2 (1.1)	10.5 (1.3)
Non-Hispanic Whites	11.8 (1.8)	16.7 (2.5)	6.3 (1.5)	8.2 (1.7)	9.1 (0.9)	12.2 (1.4)
Manic episode						
Mexican Americans	0.4 (0.3)	0.8 (0.6)	0	0	0.2 (0.2)	0.5 (0.3)
Non-Hispanic Whites	1.4 (0.7)	1.2 (0.6)	0.7 (0.5)	0.3 (0.2)	1.0 (0.4)	0.7 (0.3)
Major depressive disorder						
Mexican Americans	4.0 (1.2)	6.1 (1.5)	3.4 (1.3)	6.5 (1.8)	3.8 (0.8)	6.3 (1.1)
Non-Hispanic Whites	8.7 (1.5)	15.3 (2.3)	3.6 (1.4)	5.2 (1.6)	6.2 (0.8)	10.0 (1.3)
Dysthymia						
Mexican Americans	3.4 (1.0)	3.5 (1.0)	3.1 (1.3)	9.4 (2.0)	3.3 (0.8)	6.0 (0.9)
Non-Hispanic Whites	5.0 (1.3)	5.2 (1.2)	2.5 (0.8)	3.5 (0.8)	3.7 (0.8)	4.3 (0.8)
Anxiety/somatoform disorders						
Mexican Americans	10.2 (1.7)	16.0 (2.3)	7.5 (2.1)	23.3 (3.0)	9.2 (1.4)	19.2 (1.8)
Non-Hispanic Whites	11.5 (2.0)	19.7 (2.4)	6.3 (1.2)	15.4 (2.5)	9.0 (1.2)	17.5 (1.7)
Phobia						
Mexican Americans	9.4 (1.7)	15.5 (2.3)	7.2 (2.1)	20.7 (2.9)	8.6 (1.4)	17.8 (1.7)
Non-Hispanic Whites	8.2 (1.7)	16.8 (2.1)	4.5 (1.1)	12.1 (2.2)	6.4 (1.0)	14.4 (1.4)
Panic disorder						
Mexican Americans	0.6 (0.4)	0.7 (0.4)	0.2 (0.2)	3.4 (1.1)	0.4 (0.3)	1.9 (0.5)
Non-Hispanic Whites	1.3 (0.6)	3.0 (0.8)	0.7 (0.4)	2.4 (1.2)	1.0 (0.3)	2.6 (0.8)
Obsessive-compulsive disorder						
Mexican Americans	1.8 (0.8)	1.4 (0.6)	0.3 (0.3)	3.1 (1.1)	1.2 (0.5)	2.1 (0.6)
Non-Hispanic Whites	3.1 (0.8)	3.2 (0.9)	2.3 (0.9)	3.4 (1.4)	2.7 (0.6)	3.3 (0.9)
Antisocial personality disorder						
Mexican Americans	8.3 (1.4)	1.7 (0.7)	1.8 (1.2)	1.2 (0.7)	5.9 (1.0)	1.5 (0.5)
Non-Hispanic Whites	6.4 (1.6)	2.6 (0.9)	2.7 (1.1)	0.4 (0.3)	4.6 (0.9)	1.4 (0.5)

* Diagnostic Interview Schedule/Diagnostic and Statistical Manual of Mental Disorders.

¹ Sample populations are as follows: Mexican Americans, n=378, Non-Hispanic Whites, n=360.² Sample populations are as follows: Mexican Americans, n=382, Non-Hispanic Whites, n=353.³ Sample populations are as follows: Mexican Americans, n=273, Non-Hispanic Whites, n=271.⁴ Sample populations are as follows: Mexican Americans, n=270, Non-Hispanic Whites, n=353.⁵ Total populations for both age groups are as follows: Mexican Americans, n=591, Non-Hispanic Whites, n=631.⁶ Total populations for both age groups are as follows: Mexican Americans, n=652, Non-Hispanic Whites, n=678.⁷ Disorders in this category include cognitive impairment, anorexia nervosa, and somatization.

Note: Values are expressed as the rate in percent. Numbers in parentheses indicate standard errors.

Source: Marvin Karno, Richard Hough, M. Audrey Burnam, Javier Escobar, Dianne M. Timbers, Felipe Santana, Jeffrey Boyd, "Lifetime Prevalence of Specific Psychiatric Disorders Among Mexican Americans and Non-Hispanic Whites in Los Angeles," Archives of General Psychiatry, Vol. 44, Aug 1987, pp. 697–698.

Table 3

Lifetime prevalence of DSM-III* diagnoses by education

	New Haven, Conn. %		Baltimore %		St. Louis %	
	College Graduate N=830	Other N=2,218	College Graduate N=303	Other N=3,174	College Graduate N=416	Other N=2,498
Cognitive impairment	0.3 (0.2)	1.7 (0.3)†	0.2 (0.2)	1.4 (0.2)†	0.0 (0.0)	0.8 (0.1)†
Simple phobia	3.8 (0.8)	7.2 (0.5)†	12.8 (2.3)	21.4 (0.9)‡	5.1 (1.5)	7.2 (0.7)
Agoraphobia	2.2 (0.5)	4.1 (0.4)§	4.4 (1.1)	9.6 (0.6)†	2.1 (0.8)	4.5 (0.5)§
Schizophrenia	0.5 (0.3)	2.5 (0.3)†	0.6 (0.4)	1.7 (0.3)	0.6 (0.3)	1.1 (0.3)
Schizophreniform disorder	0.0 (0.0)	0.1 (0.1)	0.0 (0.0)	0.3 (0.1)†	0.0 (0.0)	0.1 (0.1)
Alcohol abuse/dependence	9.5 (1.0)	12.2 (0.8)§	12.1 (2.4)	13.8 (0.7)	15.3 (2.3)	15.9 (1.0)
Somatization	0.0 (0.0)	0.2 (0.1)§	0.0 (0.0)	0.1 (0.1)	0.1 (0.1)	0.2 (0.1)
Panic	1.6 (0.4)	1.4 (0.3)	1.1 (0.6)	1.5 (0.2)	0.5 (0.3)	1.7 (0.4)§
Manic episode	0.7 (0.3)	1.3 (0.3)	0.3 (0.3)	0.7 (0.2)	0.6 (0.4)	1.1 (0.3)
Antisocial personality	0.9 (0.4)	2.5 (0.4)	1.5 (0.8)	2.7 (0.3)	2.3 (1.0)	3.4 (0.5)
Major depressive episode	7.1 (1.1)	6.6 (0.5)	5.5 (1.2)	3.6 (0.3)	4.6 (0.9)	5.7 (0.6)
Dysthymia	2.2 (0.6)	3.5 (0.4)	2.5 (1.0)	2.1 (0.2)	3.7 (0.9)	3.9 (0.5)
Obsessive-compulsive	2.7 (0.5)	2.6 (0.3)	1.9 (0.7)	3.1 (0.4)	2.1 (0.8)	1.9 (0.4)
Drug abuse/dependence	5.2 (0.8)	6.0 (0.6)	8.2 (1.4)	5.4 (0.5)	4.5 (1.3)	5.8 (0.6)
Anorexia nervosa	0.0 (0.0)	0.1 (0.0)	0.0 (0.0)	0.1 (0.1)	0.2 (0.2)	0.1 (0.1)
Any of the covered diagnoses	25.1 (1.8)	30.2 (1.1)†	30.9 (3.1)	38.7 (1.0)†	25.6 (2.7)	31.9 (1.2)§

†P < .01

‡P < .001.

§P < .05.

* Diagnostic and Statistical Manual of Mental Disorders.

Note: Numbers in parentheses are standard errors.

Source: Lee N. Robins, John E. Helzer, Myrna Weissman, Helen Orvaschel, Ernest Gruenberg, Jack Burke, Darrel A. Regier, "Lifetime Prevalence of Specific Psychiatric Disorders in Three Sites," Archives of General Psychiatry, Vol. 41, Oct 1984, p. 956.

Table 4

Six-month prevalence of selected disorders by socioeconomic status score controlling for sex and age (weighted) for five epidemiologic catchment area sites*

Sex and Age	Socioeconomic Status Score			
	0.0–25.0	25.1–50.0	50.1–75.0	75.1–100.0
Any DIS Disorder Excluding Phobias and Cognitive Impairment				
Male				
18–29	22.2%	20.6%	19.0%	13.7%
30–44	29.0	20.6	13.1	9.6
45–64	16.4	10.4	7.4	4.1
65+	3.9	4.6	3.2	2.9
Female				
18–29	17.7	13.2	12.0	5.3
30–44	16.2	13.4	9.0	9.2
45–64	8.9	5.2	5.4	4.0
65+	3.6	3.3	3.6	1.5
All respondents	11.5	12.0	10.9	7.6
Crude relative risk	1.51	1.58	1.43	base
Est. relative risk**	2.86	2.04	1.55	base
Significance***	$p < .001$	$p < .001$	$p < .001$	—
Major Depression				
Male				
18–29	1.1%	2.7%	1.6%	1.7%
30–44	1.1	1.7	1.4	1.1
45–64	1.0	2.0	0.8	0.8
65+	0.7	0.1	0.6	0.0
Female				
18–29	5.3	3.9	4.2	2.6
30–44	4.0	6.2	4.6	3.3
45–64	3.0	2.8	3.2	1.3
65+	1.4	1.1	0.7	1.3
All respondents	2.2	2.9	2.5	1.7
Crude relative risk	1.31	1.79	1.53	base
Est. relative risk**	1.79	1.92	1.51	base
Significance***	$p < .05$	$p < .01$	$p < \text{n.s.}$	—
Schizophrenia				
Male				
18–29	1.4%	0.9%	0.4%	1.4%
30–44	4.5	1.3	0.7	0.6
45–64	0.6	0.8	0.8	0.0
65+	0.1	0.1	0.0	0.0
Female				
18–29	1.7	1.8	1.4	0.0
30–44	3.7	1.9	1.5	0.0
45–64	1.7	0.3	0.5	0.0
65+	0.2	0.2	0.0	0.0
All respondents	1.3	1.0	0.8	0.3
Crude relative risk	4.33	3.33	2.67	base
Est. relative risk**	7.85	3.84	2.72	base
Significance***	$p < .001$	$p < .01$	$p < .05$	—

Table 4

Six-month prevalence of selected disorders by socioeconomic status score controlling for sex and age (weighted) for five epidemiologic catchment area sites*—Continued

Sex and Age	Socioeconomic Status Score			
	0.0– 25.0	25.1– 50.0	50.1– 75.0	75.1– 100.0
Alcohol Abuse or Dependence				
Male				
18–29	17.1%	9.2%	10.0%	7.8%
30–44	24.3	15.2	8.5	5.7
45–64	13.8	7.4	6.1	3.2
65+	1.9	3.5	2.0	1.9
Female				
18–29	2.1	3.7	2.1	0.5
30–44	4.2	2.3	1.0	1.3
45–64	1.7	0.8	0.6	0.6
65+	0.1	0.1	1.2	0.0
All respondents	5.3	5.2	4.6	3.3
Crude relative risk	1.61	1.58	1.39	base
Est. relative risk**	3.59	2.19	1.59	base
Significance***	$p < .001$	$p < .001$	$p < .01$	—

* Data are weighted to the national demographic distribution.

** Controlling for age and sex using logistic regression.

***Adjusted for design effect.

Source: Charles Holzer, Brent Shea, Jeffrey Swanson, Philip Leaf, Jerome Myers, Linda George, Myrna Weissman, Phillip Bednarski, "The Increased Risk for Specific Psychiatric Disorders Among Persons of Low Socioeconomic Status," American Journal of Social Psychiatry, VI, Fall, 1986, Tables 3, 4, 6, 7, pp. 266–270.

Table 5

Prevalence of alcoholism by age, sex, and ethnicity: Combined five-site epidemiologic catchment area data, 1980-81
(Weighted to National Demographic Distribution)

	Male				Female			
	One Month	One Year	Lifetime	Remis- sion 1Y- LT/LT	One Month	One Year	Lifetime	Remis- sion 1Y- LT/LT
	% ± SE	% ± SE	% ± SE	%	% ± SE	% ± SE	% ± SE	%
Total	5.74 ± 0.35	11.90 ± 0.49	23.83 ± 0.64	50	1.60 ± 0.15	2.16 ± 0.21	4.75 ± 0.30	53
Age								
18-29	7.16 ± 0.67	17.03 ± 0.98	26.63 ± 1.16	36	2.03 ± 0.37	4.14 ± 0.53	6.89 ± 0.67	40
30-44	7.29 ± 0.75	14.10 ± 1.10	27.91 ± 1.29	49	1.14 ± 0.30	2.12 ± 0.40	5.50 ± 0.64	61
45-64	4.34 ± 0.58	7.85 ± 0.77	21.15 ± 1.17	63	0.33 ± 0.16	1.04 ± 0.28	3.06 ± 0.47	66
65+	1.93 ± 0.58	3.10 ± 0.73	13.52 ± 1.45	77	0.40 ± 0.22	0.46 ± 0.24	1.49 ± 0.43	69
Whites								
Total	5.49 ± 0.37	11.69 ± 0.53	23.44 ± 0.69	50	1.03 ± 0.16	2.11 ± 0.23	4.52 ± 0.33	53
18-29	7.63 ± 0.78	18.10 ± 1.13	28.31 ± 1.32	36	2.22 ± 0.44	4.54 ± 0.62	7.50 ± 0.78	39
30-44	6.46 ± 0.78	13.52 ± 1.08	27.00 ± 1.40	50	1.04 ± 0.31	1.96 ± 0.43	5.47 ± 0.70	64
45-64	4.02 ± 0.61	7.20 ± 0.80	19.75 ± 1.23	64	0.20 ± 0.13	0.81 ± 0.27	2.60 ± 0.47	69
65+	1.74 ± 0.59	2.85 ± 0.75	12.53 ± 1.49	77	0.42 ± 0.24	0.47 ± 0.25	1.46 ± 0.45	68
Blacks								
Total	6.68 ± 1.19	11.51 ± 1.53	23.71 ± 2.03	51	1.35 ± 0.50	2.50 ± 0.68	5.47 ± 0.99	54
18-29	4.03 ± 1.53	7.92 ± 2.11	12.61 ± 2.59	37	1.11 ± 0.77	2.37 ± 1.12	4.19 ± 1.48	44
30-44	11.04 ± 2.80	16.30 ± 3.30	31.33 ± 4.15	48	2.08 ± 1.18	3.37 ± 1.49	6.88 ± 2.09	51
45-64	8.17 ± 2.68	15.24 ± 3.52	32.99 ± 4.61	54	1.34 ± 1.01	2.56 ± 1.39	7.33 ± 2.99	65
65+	0.82 ± 1.36	2.93 ± 2.55	21.63 ± 6.21	86	0.34 ± 0.72	0.60 ± 0.96	2.20 ± 1.82	73
Hispanics								
Total	7.39 ± 1.86	15.97 ± 2.33	30.02 ± 2.41	47	1.17 ± 0.67	2.46 ± 0.97	3.85 ± 1.20	36
18-29	6.06 ± 2.30	19.29 ± 3.81	29.76 ± 4.41	35	1.90 ± 1.38	3.59 ± 1.87	4.90 ± 2.17	27
30-44	12.24 ± 3.86	19.16 ± 4.63	35.91 ± 5.65	47	0.97 ± 1.10	1.84 ± 1.51	3.67 ± 2.11	50
45-64	3.86 ± 2.65	7.69 ± 3.67	25.97 ± 6.03	70	0.81 ± 1.20	2.65 ± 2.15	3.46 ± 2.44	23
65+	5.47 ± 5.79	6.57 ± 6.31	18.10 ± 9.81	64	0.00 —	0.00 —	0.79 ± 1.88	100

Source: Adapted from: John E. Helzer and Audrey Burnam, Chapter VI: "Alcohol Abuse and Dependence," in L.N. Robins and D.A. Regiers (Eds.) *Psychiatric Disorders in America*, In Press.

Table 6

Drinking patterns by age group and race/ethnicity for U.S. males and females, 1984

Age and Race/Ethnicity

Drinking category	18-29			30-39			40-49			50-59			60+			Total		
	W	B	H	W	B	H	W	B	H	W	B	H	W	B	H	W	B	H
Percent of Population Subgroup																		
Male																		
Abstainers	17	23	22	13	15	17	21	37	23	30	29	24	41	60	30	24	29	22
Infrequent	8	10	10	10	6	5	16	8	13	7	23	7	12	14	21	10	10	10
Less Frequent Low Maximum	11	10	9	8	8	5	14	9	30	6	4	39	9	6	19	10	8	15
Less Frequent High Maximum	10	13	5	9	7	13	2	3	7	8	3	3	0	1	4	6	8	7
Frequent Low Maximum	4	10	13	12	15	6	10	13	9	13	14	5	24	7	15	12	12	11
Frequent High Maximum	20	17	24	26	33	28	17	17	6	19	7	3	10	6	8	18	18	19
Frequent Heavier Drinker	31	16	17	21	17	26	19	14	11	17	20	12	4	5	3	19	15	17
Sum of Frequent High Maximum and Frequent Heavy Drinkers	51	33	41	47	50	54	36	31	17	36	27	15	14	11	11	37	33	36
Female																		
Abstainers	22	34	40	30	32	45	35	56	41	35	60	47	49	69	78	34	46	47
Infrequent	20	19	35	16	19	23	21	11	19	21	14	8	18	12	11	19	16	24
Less Frequent Low Maximum	14	22	6	16	18	18	12	11	5	12	12	11	15	8	5	14	16	9
Less Frequent High Maximum	13	4	6	10	6	5	6	5	17	4	2	3	1	2	0	7	4	7
Frequent Low Maximum	11	9	2	7	15	3	13	7	2	22	7	4	15	8	6	13	9	3
Frequent High Maximum	13	6	8	13	5	4	7	4	14	4	4	20	1	0	0	8	4	9
Frequent Heavier Drinker	7	6	2	8	5	2	7	6	2	1	2	8	1	1	0	5	4	3
Sum of Frequent High Maximum and Frequent Heavy Drinkers	20	12	10	21	10	6	14	10	16	5	6	28	2	1	0	13	8	12

Key: W=White

B=Black

H=Hispanic

Category Definitions:

Abstainers: Drinks less than once a year or has never drunk alcoholic beverages.

Infrequent: Drinks less than once a month but at least once a year, may or may not drink five drinks at a sitting.

Less frequent low maximum: Drinks one to three times a month but never has five or more drinks at a sitting.

Less frequent high maximum: Drinks one to three times a month and has five or more drinks occasionally (at least once a year).

Frequent low maximum: Drinks once a week or more often but never drinks five or more at a sitting.

Frequent high maximum: Drinks once a week or more often and has five or more drinks at a sitting occasionally (at least once a year).

Frequent heavy drinkers: Drinks five or more drinks at a sitting once a week or more often.

Sources: Compiled and abstracted from (1) Raul Caetano, Drinking Patterns and Alcohol Problems in a National Sample of U.S. Hispanics, National Institute of Alcohol and Alcoholism, Research Monograph-18, "Alcohol Use Among U.S. Ethnic Minorities," Department of Health and Human Services Pub. No. (ADM) 89-1435, Table 1, p. 150, (2) Denise Herd, Sub-Group Differences in Drinking Patterns Among Black and White Men: Results from a National Survey. Alcohol Research Group, 1816 Scenic Ave., Berkeley, CA, Table 3, and (3) Denise Herd and Raul Caetano, Drinking Patterns and Problems Among White, Black and Hispanic Women in the U.S.: Results from a National Survey. Presented at the Alcohol and Drug Problems Association of North America, National Conference on Women's Issues, Denver, CO, May 3-6, 1987.

Table 7

Percent reporting alcohol use in the past month, by age group and demographic characteristics: 1988

Demographic characteristic	Age group (years)				Total
	12-17	18-25	26-34	35+	
Total	25.2	65.3	64.2	51.5	53.4
Sex					
Male	26.8	74.5	73.9	58.6	60.6
Female	23.5	56.6	54.8	45.4	46.7
Race/ethnicity					
White	27.4	68.8	66.2	52.7	55.1
Black	15.9	50.0	57.0	44.9	44.3
Hispanic	25.4	61.4	58.8	46.0	49.2
Region					
Northeast	30.2	70.8	68.8	58.1	59.2
North Central	27.9	73.0	72.8	50.9	55.7
South	21.2	53.2	55.9	43.7	45.1
West	24.7	74.7	65.4	59.7	60.3

Source: Compiled and abstracted from National Institute on Drug Abuse, National Household Survey on Drug Abuse: Population Estimates 1988. Department of Health and Human Services Pub. No. (ADM) 89-1636, 1989, Tables 13-A-B-C-D-E-F-G-H.

Table 8

Alcoholic deaths and mortality rates: American Indians and Alaska Natives in Reservation States and U.S. all races, age-adjusted rates per 100,000 population, 1969-86

Calendar Year	Indian & Alaska Native		U.S. All Races		Ratio Indian to U.S. All Races
	Number	Rate	Number	Rate	
1986	272	24.6	15,525	6.4	3.8
1985	281	26.1	15,844	6.2	4.2
1984	316	30.0	15,706	6.2	4.8
1983	293	28.9	15,424	6.1	4.7
1982	298	30.7	15,596	6.4	4.8
1981	338	35.8	16,745	7.0	5.2
1980	382	41.3	17,742	7.5	5.5
1979	398	45.1	17,064	7.4	6.1
1978	437	54.5	18,490	8.1	6.7
1977	429	55.5	18,437	8.3	6.7
1976	425	58.2	18,484	8.6	6.8
1975	403	62.2	18,190	8.6	7.2
1974	417	64.2	18,530	8.6	7.5
1973	399	66.1	17,791	8.6	7.7
1972	315	55.0	17,484	8.6	6.4
1971	334	62.9	16,891	8.4	7.5
1970	272	56.2	16,180	8.1	6.9
1969	267	56.6	15,138	7.7	7.4

Note: For 1969-1978 includes deaths due to alcoholism, alcoholic psychoses, and cirrhosis of the liver with mention of alcoholism. For 1979 and after includes deaths due to alcohol dependence syndrome, alcoholic psychoses, and chronic liver disease and cirrhosis, specified as alcoholic. Population estimation methodology for the American Indian and Alaska Native population revised in 1976. Maine, New York, and Pennsylvania included as Reservation States beginning in 1979. Connecticut, Rhode Island, and Texas in 1983 and Alabama in 1984. Decennial Census population counts used for 1970 and 1980.

Source: Department of Health and Human Services, Indian Health Service, Trends in Indian Health 1989, Table 4.23, p. 50.

Table 9

Percent of population engaging in illicit drug use* in past year and past month, by sex and race/ethnicity 1988, U.S. noninstitutionalized civilian population
(95% confidence limits)

Males and Females					
Used in Past Year			Used in Past Month		
White	Black	Hispanic	White	Black	Hispanic
13.9 (12.3 15.7)	13.3 (11.7 15.2)	14.7 (12.7 16.9)	7.0 (5.9 8.2)	7.8 (6.5 9.3)	8.2 (7.0 9.5)
Males					
15.8 (13.7 18.2)	16.8 (14.0 19.9)	17.7 (15.2 20.5)	8.6 (7.1 10.3)	10.2 (7.8 13.2)	9.9 (8.0 12.1)
Females					
12.1 (10.4 14.1)	10.5 (8.6 12.7)	11.7 (9.1 14.8)	5.5 (4.4 6.8)	5.8 (4.4 7.6)	6.5 (4.8 8.7)

* Includes nonmedical use of stimulants, sedatives, tranquilizers, and analgesics, as well as use of the following illicit drugs: marijuana, cocaine, inhalants, heroin, hallucinogens, and PCP.

Source: Compiled and abstracted from National Institute on Drug Abuse, National Household Survey on Drug Abuse: Population Estimates 1988. Department of Health and Human Services Pub. No. (ADM)89-1636, Tables 2B, 2., and 2D.

Table 10

Percent surveyed reporting drug use in 1988; U.S. civilian noninstitutionalized population, by sex and race

Drug	Total					
	Ever Used			Used Past Mos.		
	White	Black	Hispanic	White	Black	Hispanic
Marijuana	33.7	33.3	27.9	5.6	6.3	6.0
Cocaine (including Crack)	10.8	9.3	11.0	1.3	2.0	2.6
Crack	1.0	2.4	2.2	.2	.8	.5
Inhalants	6.0	3.6	5.8	.7	.3	.4
Hallucinogens (including PCP)	8.1	2.9	6.1	.5	*	.3
PCP	3.3	1.6	3.0	**	**	**
Stimulants	8.0	2.6	5.2	1.0	.6	.8
Sedatives	3.8	2.3	2.5	.4	.5	.5
Tranquilizers	5.2	3.1	3.3	.6	*	.6
Analgesics	5.4	4.1	4.4	.5	.7	1.2
Heroin	.8	2.3	1.1	**	**	**
Needle Use	1.2	2.0	1.3	**	**	**
Marijuana	36.4	41.4	34.2	7.5	8.9	8.4
Cocaine (including Crack)	12.9	13.4	13.9	1.8	3.0	3.6
Crack	1.2	3.6	3.0	*	*	.9
Inhalants	8.1	5.9	6.8	1.2	*	.5
Hallucinogens (including PCP)	9.8	4.2	7.3	.7	*	.2
PCP	**	**	**	**	**	**
Stimulants	8.5	3.3	5.7	.8	*	.9
Sedatives	5.0	2.5	2.7	.5	*	.7
Tranquilizers	5.7	3.7	2.9	.5	*	*
Analgesics	5.3	5.5	3.9	.4	*	*
Heroin	**	**	**	**	**	**
Needle Use	**	**	**	**	**	**
Marijuana	31.2	26.5	21.7	3.9	4.2	3.6
Cocaine (including Crack)	8.9	5.9	8.1	.9	1.2	1.5
Crack	.9	1.5	1.3	*	.3	*
Inhalants	4.0	1.6	4.7	.2	*	.3
Hallucinogens (including PCP)	6.6	1.8	4.8	.3	*	*
PCP	**	**	**	**	**	**
Stimulants	7.5	2.0	2.2	1.1	.4	.7
Sedatives	2.7	2.1	2.2	.3	*	*
Tranquilizers	4.8	2.7	3.7	.7	*	.8
Analgesics	5.4	3.0	4.9	.6	.6	1.7
Heroin	**	**	**	**	**	**
Needle Use	**	**	**	**	**	**

* Low precision; no estimates reported.

** Data not available.

Source: National Institute on Drug Abuse, National Household Survey on Drug Abuse: Population Estimates 1988, Department of Health and Human Services Pub. No. (ADM)89-1636, 1989, Tables 4-B-C-D, 5-B-C-D, 6-B-C-D, 7-B-C-D, 9-B-C-D, 10-B-C-D, 16, 17, and 18.

Table 11

Deaths and age-adjusted death rates for drug-related causes,* by race and sex: United States, 1979-87
(Rates per 100,000 population in specified group.)

Year	All races			White			All other					
	Both sexes	Male	Female	Both sexes	Male	Female	Total			Black		
							Both sexes	Male	Female	Both sexes	Male	Female
Number												
1987	9,796	6,146	3,650	7,547	4,600	2,947	2,249	1,546	703	2,101	1,465	636
1986	9,976	6,284	3,692	7,948	4,885	3,063	2,028	1,399	629	1,906	1,335	561
1985	8,663	5,342	3,321	6,946	4,172	2,774	1,717	1,170	547	1,600	1,107	493
1984	7,892	4,640	3,252	6,309	3,587	2,722	1,583	1,053	530	1,480	997	483
1983	7,492	4,145	3,347	6,187	3,378	2,809	1,305	767	538	1,194	724	470
1982	7,310	4,130	3,180	5,991	3,251	2,740	1,319	879	440	1,212	822	390
1981	7,106	3,835	3,271	5,863	3,042	2,821	1,243	793	450	1,152	751	401
1980	6,900	3,771	3,129	5,814	3,088	2,726	1,086	683	403	1,006	648	358
1979	7,101	3,656	3,445	6,116	3,077	3,039	985	579	406	897	540	357
Age-adjusted death rate												
1987	3.8	4.9	2.7	3.4	4.3	2.5	6.1	9.1	3.5	7.4	11.3	4.1
1986	3.9	5.1	2.8	3.7	4.6	2.7	5.7	8.5	3.2	6.8	10.5	3.7
1985	3.5	4.5	2.6	3.2	4.0	2.5	4.9	7.3	2.9	5.8	8.9	3.3
1984	3.2	3.9	2.5	3.0	3.5	2.5	4.7	6.7	2.9	5.5	8.2	3.2
1983	3.1	3.5	2.6	2.9	3.3	2.5	3.9	5.1	3.0	4.5	6.1	3.3
1982	3.1	3.6	2.6	2.9	3.3	2.5	4.1	5.8	2.6	4.7	6.9	2.8
1981	3.1	3.4	2.7	2.9	3.1	2.7	4.1	5.6	2.7	4.6	6.6	3.0
1980	3.0	3.4	2.6	2.9	3.2	2.6	3.7	4.9	2.5	4.1	5.8	2.7
1979	3.1	3.4	2.9	3.1	3.2	3.0	3.4	4.3	2.6	3.7	4.9	2.7

* Drug-related deaths include ICD-9 Nos. 292, Drug psychoses; 304, Drug dependence; 305.2-305.9, Nondependent use of drugs, not including alcohol and tobacco; E850-E858, Accidental poisoning by drugs, medicaments, and biologicals; E950-E950.5, Suicide by drugs, medicaments, and biologicals; E962.0, Assault from poisoning by drugs and medicaments; and E980.0-E980.5, Poisoning by drugs, medicaments, and biologicals, undetermined whether accidentally or purposely inflicted.

Source: National Center for Health Statistics. Advance Report of Final Mortality Statistics, 1987, Monthly Vital Statistics Reports, Vol. 38, No. 5, Supplement, Sep 30, 1989, Table 26, p. 44.

Table 12

Percent distribution of drug mentions by race/ethnicity, according to selected drugs: 1988

	Emergency room drug abuse related episodes					
	White	Black	Hispanic	Other	Unknown	Total
Alcohol-in-combination	44.5	37.2	9.2	.9	8.2	100%
Cocaine	26.8	56.8	8.8	.4	7.3	100%
Heroin/Morphine	39.0	40.7	13.1	.6	6.7	100%
Marijuana/Hashish	40.4	43.7	8.1	.8	6.9	100%

Source: Department of Health and Human Services, National Institute on Drug Abuse, Data from the Drug Abuse Warning Network. Annual Data, 1988. Series I, No. 8, Table 2.11, p. 35.

Table 13

Death rates for suicide, by sex, race, and age; United States, selected years 1950-86

[Data are based on the National Vital Statistics System]

Sex, race, and age	Deaths per 100,000 resident population							
	1950 ¹	1960 ¹	1970	1980	1983	1984	1985	1986
All races								
All ages, age adjusted	11.0	10.6	11.8	11.4	11.4	11.6	11.5	11.9
All ages, crude	11.4	10.6	11.6	11.9	12.1	12.4	12.3	12.8
Under 1 year	—	—	—	—	—	—	—	—
1-4 years	—	—	—	—	—	—	—	—
5-14 years	0.2	0.3	0.3	0.4	0.6	0.7	0.8	0.8
15-24 years	4.5	5.2	8.8	12.3	11.9	12.5	12.9	13.1
25-34 years	9.1	10.0	14.1	16.0	15.8	15.5	15.2	15.7
35-44 years	14.3	14.2	16.9	15.4	14.6	15.1	14.6	15.2
45-54 years	20.9	20.7	20.0	15.9	16.2	16.2	15.6	16.4
55-64 years	27.0	23.7	21.4	15.9	16.5	17.3	16.7	17.0
65-74 years	29.3	23.0	20.8	16.9	17.7	18.8	18.5	19.7
75-84 years	31.1	27.9	21.2	19.1	22.3	22.0	24.1	25.2
85 years and over	28.8	26.0	20.4	19.2	19.0	18.4	19.1	20.8
White male								
All ages, age adjusted	18.1	17.5	18.2	18.9	19.3	19.7	19.9	20.5
All ages, crude	19.0	17.6	18.0	19.9	20.6	21.3	21.5	22.3
Under 1 year	—	—	—	—	—	—	—	—
1-4 years	—	—	—	—	—	—	—	—
5-14 years	0.3	0.5	0.5	0.7	0.9	1.1	1.3	1.2
15-24 years	6.6	8.6	13.9	21.4	20.6	22.0	22.7	23.6
25-34 years	13.8	14.9	19.9	25.6	26.2	25.8	25.4	26.4
35-44 years	22.4	21.9	23.3	23.5	23.2	23.7	23.5	23.9
45-54 years	34.1	33.7	29.5	24.2	25.5	25.3	25.1	26.3
55-64 years	45.9	40.2	35.0	25.8	27.4	28.8	28.6	28.7
65-74 years	53.2	42.0	38.7	32.5	33.2	35.6	35.3	37.6
75-84 years	61.9	55.7	45.5	45.5	52.5	52.0	57.1	58.9
85 years and over	61.9	61.3	50.3	52.8	56.8	55.8	60.3	66.3
Black male								
All ages, age adjusted	7.0	7.8	9.9	11.1	10.5	11.2	11.3	11.5
All ages, crude	6.3	6.4	8.0	10.3	9.9	10.6	10.8	11.1
Under 1 year	—	—	—	—	—	—	—	—
1-4 years	—	—	—	—	—	—	—	—
5-14 years	—	0.1	0.1	0.3	0.5	0.5	0.6	0.8
15-24 years	4.9	4.1	10.5	12.3	11.5	11.2	13.3	11.5
25-34 years	9.3	12.4	19.2	21.8	19.1	20.7	19.6	21.3
35-44 years	10.4	12.8	12.6	15.6	14.0	16.5	14.9	17.5
45-54 years	10.4	10.8	13.8	12.0	12.1	11.6	13.5	12.8
55-64 years	16.5	16.2	10.6	11.7	11.6	13.4	11.5	9.9
65-74 years	10.0	11.3	8.7	11.1	13.6	13.8	15.8	16.1
75-84 years	6.2	6.6	8.9	10.5	15.8	15.1	15.6	16.0
85 years and over	—	6.9	10.3	18.9	12.7	11.1	7.7	17.9
White female								
All ages, age adjusted	5.3	5.3	7.2	5.7	5.6	5.6	5.3	5.4
All ages, crude	5.5	5.3	7.1	5.9	5.9	5.9	5.6	5.9
Under 1 year	—	—	—	—	—	—	—	—
1-4 years	—	—	—	—	—	—	—	—
5-14 years	0.1	0.1	0.1	0.2	0.3	0.3	0.5	0.3
15-24 years	2.7	2.3	4.2	4.6	4.6	4.7	4.7	4.7

Table 13

Death rates for suicide, by sex, race, and age; United States, selected years 1950-86—Continued

[Data are based on the National Vital Statistics System]

Sex, race, and age	Deaths per 100,000 resident population							
	1950 ¹	1960 ¹	1970	1980	1983	1984	1985	1986
25-34 years	5.2	5.8	9.0	7.5	7.2	6.6	6.4	6.2
White female								
35-44 years	8.2	8.1	13.0	9.1	8.2	8.4	7.7	8.3
45-54 years	10.5	10.9	13.5	10.2	9.9	10.0	9.0	9.6
55-64 years	10.7	10.9	12.3	9.1	9.1	9.1	8.4	9.0
65-74 years	10.6	8.8	9.6	7.0	7.9	7.8	7.3	7.7
75-84 years	8.4	9.2	7.2	5.7	6.6	6.8	7.0	8.0
85 years and over	8.9	6.1	6.1	5.8	5.3	5.1	4.7	5.0
Black female								
All ages, age adjusted	1.7	1.9	2.9	2.4	2.1	2.3	2.1	2.4
All ages, crude	1.5	1.6	2.6	2.2	2.0	2.2	2.1	2.3
Under 1 year	—	—	—	—	—	—	—	—
1-4 years	—	—	—	—	—	—	—	—
5-14 years	—	0.0	0.2	0.1	0.6	0.2	0.2	0.2
15-24 years	1.8	1.3	3.8	2.3	2.7	2.4	2.0	2.3
25-34 years	2.6	3.0	5.7	4.1	2.9	3.5	3.0	3.8
35-44 years	2.0	3.0	3.7	4.6	3.5	3.2	3.6	2.8
45-54 years	3.5	3.1	3.7	2.8	3.0	3.5	3.2	3.2
55-64 years	1.1	3.0	2.0	2.3	1.7	3.1	2.2	4.2
65-74 years	1.9	2.3	2.9	1.7	1.3	2.5	2.0	2.8
75-84 years	2.4	1.3	1.7	1.4	1.3	0.5	4.5	2.6
85 years and over	—	—	3.2	—	2.3	0.8	1.4	—

¹ Includes deaths of nonresidents of the United States.Note: For data years shown, the code numbers for cause of death are based on the then current *International Classification of Diseases*.

Source: National Center for Health Statistics. Health, United States, 1988. Department of Health and Human Services Pub. No. (PHS) 89-1232. Public Health Service, Washington, U.S. Government Printing Office, Mar 1989, Table 32, p. 74.

Table 14

Death rates* from suicide by age and sex for American Indian and Alaska Natives in Reservation States, 1984-86, and U.S. all races, 1985

	Indian & Alaska Native		
	Both sexes	Male	Female
Under 5 years	—	—	—
5-14 years	1.7	2.3	1.1
15-24 years	24.4	40.9	7.8
25-34 years	26.0	45.2	7.5
35-44 years	19.1	30.4	8.4
45-54 years	10.6	18.2	3.5
55-64 years	9.2	15.9	3.2
65-74 years	7.5	13.5	2.5
75-84 years	3.2	7.3	0.0
85 years +	5.6	14.0	0.0

	U.S. all races		
	Both sexes	Male	Female
Under 5 years	—	—	—
5-14 years	0.8	1.2	0.4
15-24 years	12.9	21.4	4.4
25-34 years	15.2	24.5	5.9
35-44 years	14.6	22.3	7.1
45-54 years	15.6	23.5	8.3
55-64 years	16.7	26.8	7.7
65-74 years	18.5	33.3	6.9
75-84 years	24.1	53.1	6.8
85 years +	19.1	55.4	4.6

*Rate per 100,000 population.

—Represents zero.

Source: Department of Health and Human Services, Indian Health Service, "Trends in Indian Health 1989", Table 4.20, p. 46.

TABLE 15

Mental health facilities by service mode, 1970-84

Type of services	1970	1972	1974	1976	1978	1980	1982	1984	Percent Change 1970-84	Percent Change 1980-84
All facilities	3,005	3,187	3,315	3,480	3,738	3,727	4,302	4,438	47.7	19.1
Inpatient services	1,734	1,913	2,060	2,273	2,421	2,526	2,305	2,849	64.3	12.8
Outpatient services	2,156	2,271	2,219	2,318	2,429	2,431	NA	2,838	31.6	16.7
Day treatment	778	981	1,281	1,447	1,571	1,648	NA	1,817	133.5	10.3

NA=Not available.

Source: National Institute of Mental Health. Mental Health, United States, 1987, Department of Health and Human Services Pub. No. (ADM)87-1518, Washington, U.S. Government Printing Office, Tables 2.1, 2.1.a., 2.1.b., 2.1.c., pp. 28-31.

Table 16

Rates per 100,000 civilian population ¹ of inpatient admissions and inpatients under care, by race, sex, and type of inpatient psychiatric service: United States, 1986

Race and sex	Total, all inpatient services	State and county mental hospitals	Private psychiatric hospitals	VA medical centers	Non-Federal general hospitals	Multiservice mental health organizations
Inpatient Admissions						
Total, all races	666.8	136.1	86.7	74.8	331.7	37.4
Male	790.4	176.6	92.1	149.3	327.6	44.7
Female	550.9	98.1	81.5	5.1	335.5	30.6
Total White	593.6	106.7	87.3	65.0	299.0	35.6
Male	676.8	137.1	90.3	128.3	278.3	42.9
Female	515.1	78.1	84.5	5.3	318.6	28.7
Total all other races	1074.5	299.8	83.1	129.5	514.3	47.8
Male	1440.6	403.0	102.8	269.1	610.3	55.4
Female	745.8	207.2	65.5	*	428.0	41.0
Inpatients Under Care						
Total, all races	67.2	39.4	6.9	5.5	13.5	2.0
Male	82.2	48.7	6.8	11.1	13.3	2.3
Female	53.1	30.7	6.9	0.3	13.6	1.7
Total White	56.5	30.4	7.1	5.0	12.1	1.9
Male	64.3	34.1	7.1	9.9	11.3	2.0
Female	49.1	26.9	7.2	0.3	12.9	1.8
Total all other races	126.8	89.7	5.3	8.6	20.9	2.4
Male	184.6	132.7	5.1	18.1	24.7	4.0
Female	74.9	51.1	5.4	—	17.4	1.1

¹Population estimates used as denominators for rate computations are from the U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 1022, Table 3, p. 33.

Note: Percentages may not add to 100 percent because of rounding.

* Estimate based on five or fewer sample cases or estimate has a relative standard error of 50 percent or higher. Therefore, estimate not shown because it does not meet standards of reliability.

Source: National Institute of Mental Health, 1986 Client/Patient Sample Survey of Inpatient, Outpatient, and Partial Care Programs. Survey and Reports Branch, Division of Biometry and Applied Sciences.

Table 17

Median days of stay for persons terminated (excluding deaths) from inpatient psychiatric service, by race and sex: United States, 1986

	Inpatient psychiatric service					
	Total, all inpatient services	State and county mental hospitals	Private psychiatric hospitals	VA medical centers	Non-Federal general hospitals	Multiservice mental health organizations
Race and Sex						
Total, all races	15	28	24	23	10	11
Male	15	27	25	23	9	10
Female	14	30	24	26	12	11
Total White	15	27	25	24	11	11
Male	15	25	26	23	10	10
Female	15	31	24	28	12	12
Total all other races	14	30	19	22	9	9
Male	16	30	17	22	8	11
Female	13	30	20	*	9	*

* Median based on five or fewer sample cases or median has a relative standard error of 50 percent or higher. Therefore, median not shown because it does not meet standards of reliability.

Source: National Institute of Mental Health. 1986 Client/Patient Sample Survey of Inpatient, Outpatient, and Partial Care Programs. Survey and Reports Branch, Division of Biometry and Applied Sciences.

Table 18

Rate of discharges from short-stay hospitals, and average lengths of stay, by mental disorder-related category of first-listed diagnosis and race, United States, 1982, 1984, 1985, 1986

Category of first-listed diagnosis (and ICD-9-CM code) and year	Rate of patients discharged per 10,000 population			Average length of stay in days			Not stated
	All races	White	All Other	All races	White	All other	
Mental disorders (290-319)							
1982	76.0	65.1	76.8	12.1	12.5	11.2	10.9
1984	72.1	60.9	81.1	11.9	12.3	11.0	10.8
1985	71.7	61.3	76.7	12.3	12.6	12.2	10.7
1986	75.5	62.2	85.7	12.3	12.7	11.4	10.9
Psychoses (290-299)							
1982	25.0	22.2	27.8	15.5	16.0	14.2	12.7
1984	26.6	23.7	30.5	14.5	14.9	13.3	12.9
1985	29.6	26.2	32.8	14.9	15.1	15.6	11.1
1986	32.0	27.2	36.6	14.4	15.0	13.7	11.8
Neurotic and personality disorders (300-301)							
1982	12.4	12.0	8.2	10.1	10.1	10.4	10.3*
1984	9.7	9.2	7.2	11.2	11.2	13.6	7.7
1985	8.2	7.9	4.9	10.0	10.2	8.9	9.3
1986	NA	NA	NA	NA	NA	NA	NA
Alcohol dependence syndrome (303)							
1982	18.1	13.1	20.8	11.2	11.7	9.1	11.2
1984	16.7	11.5	23.0	10.6	10.9	9.2	11.0
1985	16.4	12.3	19.2	10.7	11.1	8.7	11.3
1986	16.6	12.4	19.6	10.7	11.4	8.0	10.8

Sample size is 30-59. Value should be used with caution.

NA=Not available.

Source: (1) National Center for Health Statistics, E.J. Graves: Utilization of short-stay hospitals, United States, 1984. Annual summary. Vital and Health Statistics, Series 13, No. 78, DHHS Pub. No. (PHS) 84-1739, Aug 1984, Table 10, pp. 32-33. (2) National Center for Health Statistics, E.J. Graves: Utilization of short-stay hospitals, United States, 1984. Vital and Health Statistics, Series 13, No. 84, (PHS) 86-1745, April 1987, Table 10, pp. 32-33. (3) National Center for Health Statistics, E.J. Graves: Utilization of short-stay hospitals, United States, 1985. Vital and Health Statistics, Series 13, No. 91, DHHS Pub. No. (PHS) 87-1752, May 1987, Table 12, p. 36. (4) National Center for Health Statistics, E.J. Graves, 1988. Utilization of short-stay hospitals, United States, 1986, Annual Summary, Vital and Health Statistics, Series 13, No. 96, DHHS Pub. No. (PHS) 88-1757, Table 10, pp. 32-33.

Table 19

Number of discharges and hospital days due to mental disorders, Indian health service and contract general hospitals, fiscal years 1967-88

	1988	1987	1982	1976	1972	1971	1970	1969	1968	1967
Total number of discharges	3,830	3,905	4,954	6,833	6,017	5,310	4,750	4,631	3,922	3,092
IHS hospitals	3,002	3,031	3,956	4,948	4,662	4,138	3,657	3,665	3,003	2,430
Contract hospitals	828	874	998	1,885	1,355	1,172	1,093	966	919	662
Total hospital days	—	—	—	—	40,521	36,198	26,571	28,501	27,737	19,614
IHS hospitals	—	—	—	—	34,666	29,343	22,189	24,630	22,462	16,507
Contract hospitals	—	—	—	—	5,855	6,855	4,382	3,871	5,275	3,107

—Not available.

Source: Updated from Health Status of Minorities and Low Income Groups, Department of Health and Human Services Pub. No. (HRSA) HRS-P-DV 85-1, Table 12, p. 176 with data from Department of Health and Human Services, Indian Health Service, Chart Series Book, 1988, Table 5.7, p. 60 and Department of Health and Human Services, Indian Health Service, "Trends in Indian Health 1989", Table 5.7, p. 64.

Table 20

Inpatient discharges and outpatient counts ¹ and percent distribution of disorders, for mental health diagnoses for Indian health service and contract facilities, fiscal years 1987 and 1988, by age group

Disorder	Age Group						Total	Per- cent distrib- ution
	0-14	15-24	25-44	45-64	65+	Un- known		
Inpatients—Fiscal Year 1988								
I. Organic Psychotic Conditions*	11	22	37	45	66	0	171	4.1%
II. Other Psychoses**	17	181	302	89	51	0	640	15.5%
III. Neurotic Disorders***	96	317	320	151	59	0	943	22.8%
IV. Mental Retardation	4	2	0	1	1	0	8	0.2%
V. Alcohol Drug Abuse	39	361	1,300	577	92	0	2,369	57.3%
Total	168	882	1,949	863	269	0	4,131	100%
(Percent of count)	(4.1%)	(21.4%)	(47.2%)	(20.9%)	(6.5%)		(100%)	
(Percent of population) ²	(32.5%)	(22.5%)	(26.7%)	(13.1%)	(5.3%)		(100%)	
Outpatients—Fiscal Year 1987								
I. Organic Psychotic Conditions*	39	133	362	311	976	3	1,824	1.5%
II. Other Psychoses**	188	2,342	7,232	2,869	691	20	13,342	10.8%
III. Neurotic Disorders***	10,547	12,140	31,469	17,735	5,460	136	77,487	63.1%
IV. Mental Retardation	518	564	654	173	13	1	1,923	1.6%
V. Alcohol/Drug Abuse-Psychoses	372	3,861	12,928	5,047	736	48	22,992	18.7%
Non-Dependent Abuse	281	1,258	2,447	1,119	202	14	5,321	4.3%
Subtotal	653	5,119	15,375	6,166	938	62	28,313	23.0%
Total	11,945	20,298	55,092	27,254	8,078	222	122,889	100%
(Percent of count)	(9.7%)	(16.5%)	(44.8%)	(22.2%)	(6.6%)		(100%)	
(Percent of population) ²	(32.5%)	(22.5%)	(26.7%)	(13.1%)	(5.3%)	—	(100%)	

¹ These are not unduplicated client totals, but contact counts.

² The age distribution for the American Indian/Alaskan Native population is taken from 1980 census data, Indian Health Service Chart Series Book, 1988, Table. 2.1.

* Including senile and presenile conditions, transient and other organic conditions, exclusive of alcoholic psychoses.

** Schizophrenia, nonorganic psychoses, affective psychoses, paranoia.

*** Neuroses, personality and psychophysiological disorders.

Source: Department of Health and Human Services, Indian Health Service, unpublished data.

Table 21

Rate per 100,000 civilian population¹ of admissions to inpatient psychiatric services, by race, Hispanic origin,² and age: United States, 1980

Race, Hispanic origin, and age	Inpatient psychiatric services			
	State and county mental hospitals	Private psychiatric hospitals	Non-Federal general hospitals	VA medical centers
Total, all races	163.6	62.6	295.3	70.4
Under 18	26.1	26.3	75.7	*
18-24	264.6	79.6	396.9	38.2
25-44	282.9	89.1	482.8	129.9
45-64	175.7	71.0	316.9	135.0
65 and over	78.0	54.1	230.4	25.2
White	136.8	63.4	284.9	64.9
Under 18	23.7	28.1	75.8	*
18-24	214.5	79.3	357.9	31.7
25-44	225.3	87.0	454.5	108.6
45-64	156.5	73.2	316.2	135.6
65 and over	70.8	55.1	232.8	25.7
Black	364.2	62.9	386.6	118.2
Under 18	35.2	17.0	73.7	—
18-24	598.5	89.2	641.7	85.2
25-44	753.0	118.2	753.9	312.0
45-64	354.3	60.0	349.6	143.2
65 and over	162.2	46.0	199.5	21.3
All other races	142.0	29.6	221.7	33.4
Under 18	49.9	23.3	85.2	—
18-24	231.9	34.9	457.9	*
25-44	196.3	37.2	277.5	65.0
45-64	185.8	20.4	179.5	61.3
65 and over	*	35.7	*	*
Hispanic origin	146.0	34.4	227.0	44.1
Under 18	20.4	18.5	20.9	—
18-24	215.8	41.8	362.4	16.1
25-44	296.6	45.5	446.2	114.2
45-64	135.6	46.3	208.8	63.7
65 and over	86.0	40.5	226.6	*

¹ Civilian population estimates used as denominators for rate computations for total all races, whites, and blacks are from the U.S. Bureau of the Census, *Current Population Reports*, Series P-25, No. 929, Table 3, p. 19. Population estimates used as denominators for rate computations for American Indians or Alaskan Natives, Asian or Pacific Islanders, and Hispanics are derived from the *1980 Census of Population, General Population Characteristics*, PC80-1-B1, Table 43, pp. 32-36, and adjusted to the civilian population estimates.

² Persons of Hispanic origin may be from any racial group.

* Based on five or fewer sample cases; rate not shown because it does not meet standards of reliability.

—Not available.

Source: National Institute of Mental Health. Mental Health, United States, 1987. Department of Health and Human Services Pub. No. (ADM) 87-1518. Washington, U.S. Government Printing Office, 1987, Table 3.3, p. 78.

Table 22

Rates per 100,000 civilian population ¹ of outpatient admissions and outpatients under care, by race, sex, and type of outpatient psychiatric service: United States, 1986

Race and sex	Total, all outpatient services ²	Outpatient psychiatric service					
		State and county mental hospitals	Private psychiatric hospitals	VA medical centers	Non-Federal general hospitals	Multiservice mental health organizations	Freestanding outpatient clinics
Outpatient Admissions—Rate per 100,000 civilian population							
Total, all races	888.6	24.2	36.1	25.0	132.0	489.0	173.7
Male	964.8	30.0	34.6	50.1	118.9	557.9	164.1
Female	817.3	18.8	37.4	1.4	144.4	424.4	182.6
Total White	889.2	22.5	41.6	22.1	126.7	493.3	174.4
Male	956.4	30.4	39.9	44.1	118.9	557.6	157.5
Female	825.7	15.1	43.2	1.3	134.1	432.7	190.4
Total all other races	885.5	33.8	5.3	41.0	161.8	464.6	169.4
Male	1,012.8	27.8	*	84.6	118.9	559.7	201.9
Female	771.2	39.2	6.2	*	200.3	379.2	140.3
Outpatients Under Care—Rate per 100,000 civilian population							
Total all races	578.1	23.2	19.6	30.6	79.5	319.7	101.4
Male	580.3	23.2	16.5	59.7	61.9	316.8	98.6
Female	576.0	23.1	22.5	3.2	96.0	322.4	104.1
Total White	576.2	18.4	21.3	30.9	78.6	316.8	106.0
Male	559.9	18.4	16.7	59.6	61.3	298.4	102.1
Female	591.6	18.3	25.6	3.7	95.0	334.2	109.8
Total all other races	588.5	50.1	10.1	28.9	84.5	335.7	75.6
Male	697.0	50.7	15.0	60.5	65.7	422.2	78.4
Female	491.0	49.5	5.8	*	101.4	258.0	73.1

¹ Population estimates used as denominators for rate computations are from the U.S. Bureau of the Census, *Current Population Reports*, Series P-25, No. 1022, Table 3, p. 33.

² Includes residential treatment centers for emotionally disturbed children.

* Estimate based on five or fewer sample cases or estimate has a relative standard error of 50 percent or higher. Therefore, estimate not shown because it does not meet standards of reliability.

Note: Percentages may not add to 100 percent because of rounding.

Source: National Institute of Mental Health. 1986 Client/Patient Sample Survey of Inpatient, Outpatient, and Partial Care Programs. Survey and Reports Branch, Division of Biometry and Applied Sciences.

Table 23

Percent distribution of clients in alcohol and drug treatment units by race/ethnicity

	White	Black	Hispanic	Other	Unknown
Alcohol clients (n=349,771)	67.4	14.6	9.3	3	5.7
Drug abuse clients (n=253,748)	54.5	23.5	15.1	1.7	5.2
Total clients (n=603,519)	62.0	18.3	11.8	2.5	5.5

Source: National Institute on Drug Abuse and National Institute on Alcohol Abuse and Alcoholism, National Drug and Alcoholism Treatment Unit Survey (NDATUS), 1987 Final Report. Department of Health and Human Services Pub. No. (ADM) 89-1626, Table 11, p. 23; Table 24, p. 40; Table 37, p. 56.

Table 24

Percent distribution of drug abuse clients by race/ethnicity, by treatment modality in single-modality drug only and combined units: October 30, 1987

Race/Ethnicity	Single Modality Units			
	Detoxification	Maintenance	Drug Free	Total
White	64.8	41.1	62.8	57.8
Black	20.3	28.7	22.1	23.6
Hispanic	13.6	29.5	12.7	16.7
Asian	0.2	0.2	0.7	0.6
American Indian/Alaskan Native	1.0	0.3	1.3	1.0
Other	0.0	0.2	0.4	0.3
Total	100.0	100.0	100.0	100.0

Note: Percentages may not add to 100 percent because of rounding.

Source: National Institute on Drug Abuse and National Institute on Alcohol Abuse and Alcoholism, National Drug and Alcoholism Treatment Unit Survey (NDATUS), 1987 Final Report, Table 25, p. 41.

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A. Introduction

1. Overview of Findings

Americans age 65 and older are a heterogeneous group of survivors with vast differences in income, health, education, and social supports. Key indicators of the health, social, and economic characteristics of the U.S. older population vary considerably by race and ethnicity, often mirroring disparities in the wider racial/ethnic populations.

Older Black and Hispanic Americans are more likely than Whites to be impoverished and to have low levels of formal education—two social characteristics that have implications for health status and health behaviors. But with respect to living arrangements, older Hispanic populations are at least as likely as Whites to live in a family setting (with a spouse or other relatives). Compared to White females, older Black females, though frequently widowed, more often live with relatives such as children.

In the Black population, chances of surviving to age 65 are considerably lower than in the White population. Upon reaching age 65, Blacks of both sexes have a slightly shorter life expectancy than Whites. Mortality rates for the older populations are higher for Blacks until age 85, when mortality for Blacks becomes lower. However, the age of this so-called crossover in mortality is higher than it was in the 1960s and 1970s. National death rates for older Hispanics are not available.

In the older population up to age 85, specific causes of death that occur at a higher rate among Blacks than among Whites are heart diseases, cerebrovascular

diseases, pneumonia and influenza, injuries, and atherosclerosis. The magnitude of these mortality rate disparities varies by sex and specific age subgroup. In the 85-and-over population, mortality rates from these causes are lower in Blacks. For diabetes, kidney ailments, and septicemia, death rates are higher for Blacks at all age groups above 64. Death from cancer is more common among older Blacks than Whites, except for Black females age 85 and over. Deaths from chronic obstructive pulmonary diseases (COPD) are more common in Whites than Blacks.

American Indians and Alaskan Natives in Reservation States are less likely than White Americans to survive to the age of 65. Those who are 65 or over have substantially lower death rates than the U.S. population of this age. Certain causes of death are much more likely in older Native Americans than older Americans generally, including diabetes, injuries, kidney ailments, chronic liver disease and cirrhosis, and alcoholism.

Morbidity indicators in the older population show that Blacks are at least as likely as Whites to report having hypertension, diabetes, cerebrovascular disease, hardening of the arteries (atherosclerosis), and kidney trouble. Older Blacks are also more likely to report visual impairments (except cataracts) and glaucoma, while older Whites more often say they have cataracts, hearing impairments, and orthopedic impairments. Data

on self-reported limitation of activity, which provide a rough measure of the impact of impairments and morbidity on people, show that older Blacks are considerably more likely than Whites to report some limitation. When asked to summarize their health status, older Blacks are more than twice as likely as their White counterparts to characterize their health as poor. Income is strongly related to measures of activity limitation and health status, and may help explain some part of the Black-White differential in these indicators.

With respect to health habits, older Black males are more likely than older Hispanic or White males to smoke cigarettes, while older Hispanic females are less likely than their White or Black counterparts to smoke. Black males and females age 65 and over are more likely to be obese than Whites in this age group. However, Black-White differences in nutritional intake in general are few, and older Blacks consume less fat than older Whites.

Insurance coverage rates and health services utilization data suggest barriers to access exist for older minorities, similar to the situation in the wider racial/ethnic populations, although perhaps not as severe. Medicare coverage is almost universal for Whites and Blacks alike. However, Blacks are twice as likely as Whites to have no supplemental coverage (from either private insurance or Medicaid). Hispanics also have much lower rates of supplemental coverage. In view of the deductibles and coinsurance requirements

under Medicare, which are often large in relation to most people's old-age incomes, this supplemental coverage can be an important factor in the ability to pay for needed care. Complete lack of insurance, though rare in the older population, is twice as likely in Blacks as Whites.

Utilization data show that older Blacks and Hispanics had more annual average physician contacts than the older White population. Regarding more expensive forms of care, hospitalization and nursing home use, hospital utilization is modestly higher among Whites than Blacks, and use of nursing homes is considerably higher. Medicare program statistics suggest that minorities are more frequent users of home health care than Whites. In view of their generally poorer health status, one would expect more unmet need for care to exist among minorities than Whites.

2. The Data Sources and Their Limitations

Sources of data in this chapter include many of the same sources used in other chapters. For specific discussions of data sources, see the following chapters: for social and economic characteristics, see Chapter II, Vital Statistics; for mortality rates, see Chapter V, Chronic and Acute Disease Conditions, and Chapter II, Vital Statistics; for self-assessed health status, see Chapter III, Prevention; for health services utilization data, see Chapter XI, Utilization of Health Services; for insurance coverage, see

Chapter XII, Health Insurance Coverage and Health Care Expenditures.

Indicators unique to this chapter are self-reported impairments and chronic conditions. Prevalence estimates based on self-reports are subject to weaknesses stemming from 1) undiagnosed conditions in the population; 2) possibly faulty recall on the part of respondents; and 3) subjects' misunderstanding of diagnoses received from clinicians, which can result in misclassification of health problems, as well as in under- or over-estimates of conditions. The problem of undiagnosed conditions is illustrated by the chapter's data on diabetes, which show total prevalences considerably higher than prevalences based on self-reports. Several other chronic conditions may well be subject to similar problems of underestimation.

If faulty reporting is equally likely across all groups, then it should not distort the comparisons of interest in this book. However, education, language, and health care services utilization differ across groups. These factors are likely to be associated with respondents' ability to report accurately and to classify correctly specific health conditions. Therefore, one might expect some variation in reporting accuracy across population segments of interest in this chapter.

B. Sociodemographic Characteristics of the Older Population

1. Age, Sex, and Racial/Ethnic Ratios

The proportion of Americans that comprise the older population—usually defined as the population 65 years of age and above—has

tripled since the turn of the century. (1) In 1900, older Americans made up less than 4 percent of the population. In 1987, 7.3 percent of the population (17.7 million) was age 65 to 74, 3.8 percent (9.3 million) was 75 to 84, and 1.2 percent was 85 and older (2.9 million). (2) In total, an estimated 29.9 million Americans were at least 65 years old, making up approximately 12 percent of the population. (2)

The primary reason for the change in the proportion of older people is the aging of the large pre-1920s birth cohort and the decline in the birth rate after the mid-1960s. Increases in longevity are a secondary cause. (3) Table 1 presents actual and projected growth of the older American population. The "graying" of the country is expected to continue well into the next century. Demographers are projecting that by the year 2030, 22 percent of the population will be 65 or older.

The 85-plus population, often referred to as the "oldest old," is especially fast growing. This group will increase to nearly four times its 1980 size by 2030, and to seven times its 1980 size by 2050 (Table 1). Thus the older population itself is growing older; in 1980 the "young old" (65 to 74) outnumbered the "old old" (75 and over) by three to two, but by the turn of the century the "old old" will likely comprise about half of the total older population.

In comparison to their proportion in the White population and the general population, older people make up a smaller segment of racial minority populations. While 13 percent of Whites were 65 or older, this was

true of only 8 percent of Blacks, 6 percent of Asian Americans and Pacific Islanders, 5 percent of American Indians/Alaskan Natives, and 5 percent of Hispanics. (4) A variety of factors, including higher birth rates, higher mortality rates, and particular immigration patterns, account for the differences. These age patterns result in a 65-and-over cohort (in 1986) that is 90 percent White and 10 percent of other races, compared to 85 percent and 15 percent, respectively, in the general population. (1) Only 3 percent of the over-64 population is of Hispanic origin, compared to 8 percent of the general population. Therefore, more so than for other age groups, statistics on older persons tend to be dominated by figures on Whites, and overall averages can mask significant racial/ethnic differences.

The minority and White age structures are becoming more alike, however. Between 1977 and 1987, the older White population grew by 25 percent whereas the older Black population grew by 33 percent. (4) A trend toward more rapid growth of the older minority population is expected to continue in the next century, so that by the year 2050, Blacks will comprise 14 percent, (4) and all racial/ethnic minorities will comprise 30 percent, of the older population (see Figure 1). Figure 2 indicates that the older Black and Hispanic population will more than triple and quadruple, respectively, between 1990 and 2050. Therefore, an increasingly greater share of the older population will consist of racial and ethnic minorities. This trend will require the health services delivery system to develop greater sensitivity to social

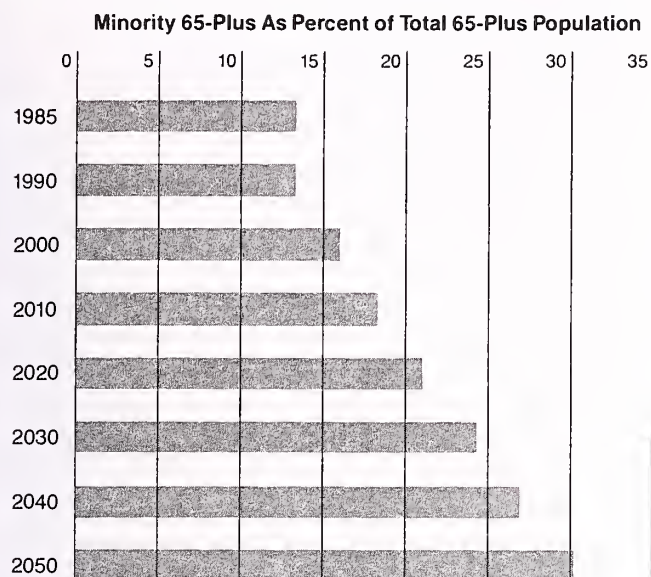
and cultural diversity among older patients, even as it strains to cope with the inevitable increased demand for services by the elderly over the next three decades. (5)

In contrast to the racial disparity in population-wide age structures, the age distributions within the older White and Black populations are similar (Table 2). The sex ratios are also alike; three in five in each race group overall are female, and the proportion of females increases with age in the same way in both race groups.

Of the four race-sex groups age 65 and over, as of March 1988, Black females were most likely to be widowed (55.3 percent), followed by White females (48.1 percent), Black males (19.7 percent), and White males (13.5 percent). A slightly smaller proportion of Hispanic elderly males (17.6 percent) than Black males were widowed, but Hispanic elderly females (42.2 percent) were less likely to be widowed than Black females. (6) These racial/ethnic differences are reflected in living arrangements (Table 3). White males are most likely to live with a spouse, followed by Hispanic and Black males, White females, Hispanic females and, finally, Black females. When living arrangements that include other relatives are considered, however, White and Black females are about equally likely to live in a family setting, and Hispanic females are the most likely. Males in all groups are more likely than females to live in a family setting, with Black males least likely among males to live with a spouse or relatives. These patterns point

Figure 1

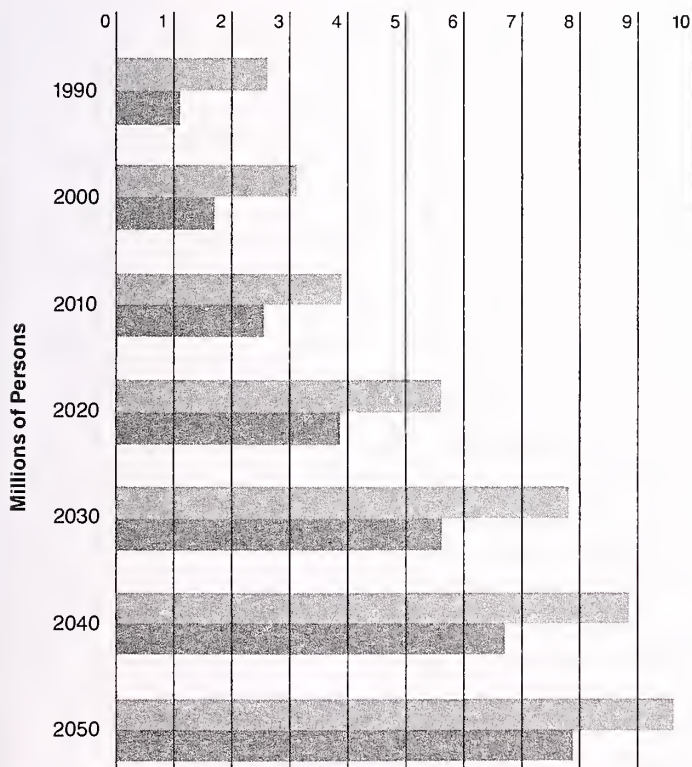
Growth of the minority older population: 1985-2050.



Source: U.S. Bureau of the Census. Gregory Spencer, "Projections of the Hispanic Population: 1983 to 2080," Current Population Reports Series P-25, No. 995, Nov 1986.

Figure 2

Growth in the older Black and Hispanic populations, 1990-2050.



Source: U.S. Bureau of the Census. Current Population Reports, Series P-25, No. 1018.

Black Hispanic

to ethnic and racial differences in household makeup that affect caregiving patterns and social support networks, as will be discussed later.

2. Income Distribution

In spite of the fact that in recent decades older persons have made significant economic gains, (6) a disproportionately large segment live in or near the edge of poverty. Twelve percent of older Americans lived below the poverty level in 1987 (see Table 4). More than 27 percent of the older population had incomes below 150 percent of the poverty level in 1987

compared to 22 percent of the nonaged. (6) Table 4 shows poverty rates in the older population by sex, race, and living arrangement. In 1987, the percent below the poverty level among older Blacks (33.9 percent) was more than triple that of older Whites (10.1 percent), while older Hispanics had a poverty rate more than two and one-half times that of older Whites (27.4 percent). Owing to their immigration status, a sizable segment of Hispanics is ineligible for Social Security. Only 77 percent of older Hispanics report receiving Social Security compared with 92 percent of all older persons. (7) Within all race groups, females were more likely than males to have incomes below poverty, but the female excess varies widely and is highest in Whites. Black females, however, were the race or ethnic group with the highest poverty rate, 40.2 percent.

Poverty rates were also higher for persons not living in families. Table 4 indicates that not living in a family setting—which often means living alone—was strongly associated with an increased risk of poverty. It increased

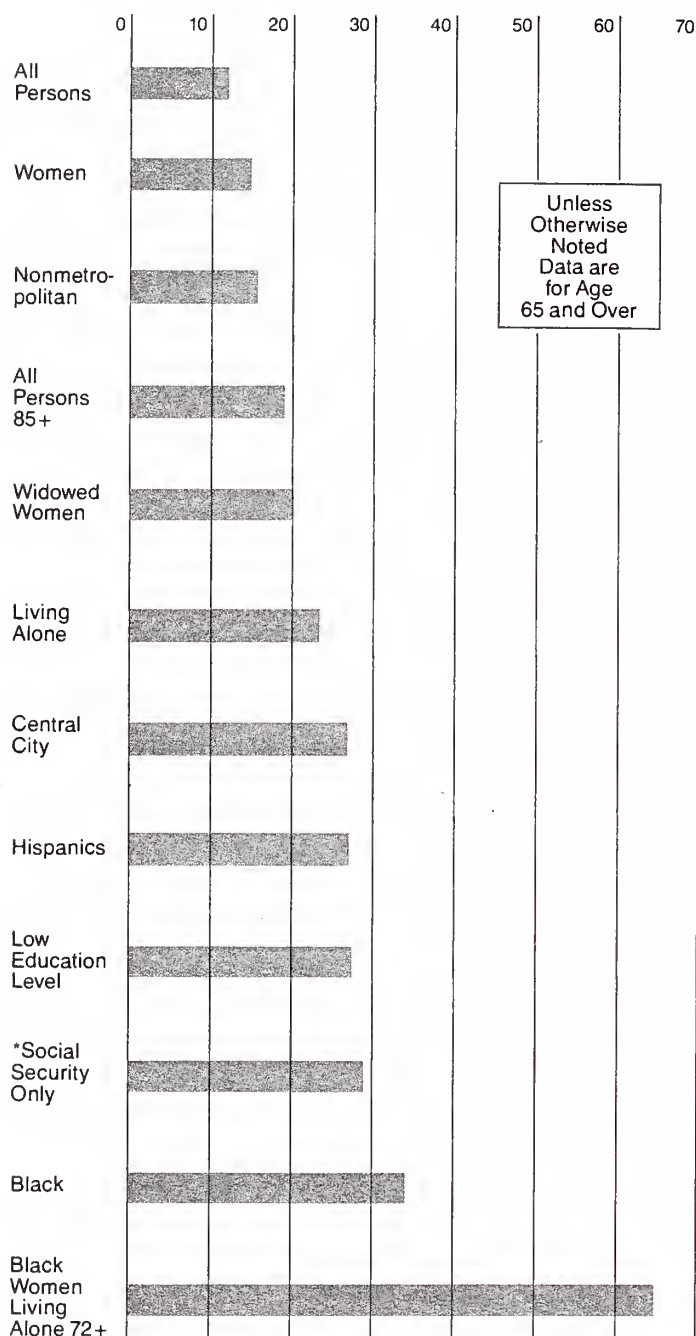
the risk by a factor of four. In 1987, 63 percent of Black women and 61 percent of Hispanic women not living in families had incomes below the poverty level compared to 22 percent of White women.

Table 5 shows the median income of persons 65 and over by sex, age, race, and Hispanic origin. In 1987, the median income for all Americans 65 and over was \$8,469. For males 65 and older, the median incomes of Blacks and Hispanics were little more than half those of Whites. Black and Hispanic older women also had substantially lower median incomes than their White counterparts. In all race/sex groups, people over age 69 have a lower median income than people age 65 to 69.

All the foregoing data imply that being female, a member of a minority group, and living alone constitute risk factors for poverty among older Americans (Figure 3). Being of advanced age is another risk factor. In combination, the risks are even more accentuated; for instance, 64.3 percent of all Black women age 72 years and older who lived alone in 1987 had incomes below the poverty level. Several subgroups of the older population at highest risk of being poor, including the oldest old, women, and minorities, are precisely those whose numbers have been growing most rapidly. Other factors that contribute to the risk of poverty include not having worked in the previous year, residence in a nonmetropolitan area or in an inner city poverty area, being widowed, having little formal education, having an illness or disability, and reliance on Social Security as the sole source of income. (6)

Figure 3

Percent of older persons below the poverty level by selected characteristics: 1987.



*Social Security is the only source of income.

Source: U.S. Senate Special Committee on Aging. "Aging America: Trends and Projections, Nov 1989," Serial No. 101-E, U.S. Government Printing Office and U.S. Bureau of the Census, Current Population Reports, Series P-60, No. 161 and unpublished data from the March 1988 Current Population Survey.

3. Education

Educational attainment—a correlate of several health problems—is lower for the older adult population than for the younger adult population. However, by the year 2000, the median number of school years completed is projected to be 12.4 for those 65 and older as compared to 12.8 for adults 25 and older. (1) Within the older population, education is another characteristic that strongly varies by race/ethnicity. In 1986, 51.8 percent of Whites 65 and older had completed high school, but only 22.3 percent of older Blacks and 19.2 percent of older Hispanics had done so. (1) Median years of school completed for older Americans was 12.1 for Whites, 8.3 for Blacks, and 7.2 for Hispanics. (1) Nearly three-quarters of all older Hispanics surveyed in 1988 reported receiving an eighth-grade education or less, twice the proportion among all older Americans. (7) Four in ten older Hispanics did not speak English, with the result that their employment in low-paying jobs left them with no pension or private health insurance benefits. (7)

C. Mortality

Measures useful for comparing mortality among racial/ethnic populations include life expectancy at age 65, age-specific all-cause mortality rates, and disease-specific mortality rates. (See Chapter II, Vital Statistics, for discussion of life expectancy at birth.)

1. Life Expectancy at Age 65 and Age-Specific Mortality Rates

Since 1970, accelerating gains in life expectancy have primarily reflected declining mortality among middle-aged and older persons. (1) Table

6 shows life expectancy at birth and at age 65 by race and sex for selected years.

In 1987, a White female who lived to age 65 could expect to live another 18.7 years, to 83.7; a Black female of 65, another 17.2 years, to 82.2; a White male of 65, another 14.9 years, to 79.9; and a Black male of 65, another 13.6 years, to 78.6. As of 1987, 86 percent of White women, 78 percent of Black women, 75 percent of White men, and 63 percent of Black men survived to age 65. (6) Thus, among these survivors, life expectancy is not very different, but the chance of surviving to age 65 varies markedly by race and sex. Table 6 indicates that relative gains in life expectancy at age 65 have varied considerably with different time spans. From 1900 to 1987 the sex-specific percentage gains are essentially the same for Whites and for Blacks. From 1950 to 1987, however, Black gains are considerably less than for Whites, especially for Black males. Of all the race-sex groups, between 1950 and 1987, White females made the largest gain in life expectancy at age 65 (3.6 years) while Black males made the smallest gain (0.7) and, in fact, experienced some declines in the intervening years.

Comparison of 1985 mortality rates for older Blacks and Whites, shown by sex in Table 7, reveals excess Black mortality in the two younger age groups, 65 to 74 and 75 to 84. The Black excess for females exceeds that for males in both age groups. However, for the population 85 and over, Black mortality is about one-fifth lower than White for males and females alike. This is

termed a racial crossover effect in mortality. (8) The estimated point at which crossover occurs seems to be rising with time: in 1960 and 1970 lower Black death rates could be observed for age 75 to 84 as well as 85 and over, but death rates for 1980 and 1985 suggest that the age of crossover has risen beyond age 75 to 84 for both Black men and Black women (see Table 7). Mortality data for 1987, in which death rates are similar to those for 1985, exhibit the same pattern of crossover after age 75 to 84. (6)

Debate persists as to whether crossover is real or an artifact of poorly reported data. In one analysis of Black/White mortality differentials, the researchers note that if it is due to systematic mortality selection for Blacks at lower ages, crossover can be expected to continue to advance to later ages as greater proportions of Blacks survive to old age. Evaluating both demographic arguments and evidence from closed cohort studies, they find that, while Whites start out with lower mortality, their mortality rates rise faster with age than do Blacks'. Thus, they conclude that the crossover effect is real. (8)

Neither national mortality rates by age group nor life expectancy data are available for Hispanics. A study of Hispanics in Cook County, Illinois, in 1979-1981, (9) based on data from the Illinois Department of Health and the 1980 census, shows that mortality rates for Mexican-born Americans age 65 to 74 were substantially lower (1,783 per 100,000) than for non-Hispanic Whites (3,069 per 100,000). By contrast, mortality rates for Puerto-Rican born Americans 65 to 74 years old are higher (3,731 per 100,000) than those of non-Hispanic Whites

of the same age, and this is true for all but those age 55 to 64. The data suggest that the two older Hispanic groups differ quite sharply in their mortality patterns, which is an important point to be kept in mind when evaluating statistics that report data for all Hispanics under one blanket category.

Table 8 shows age-specific mortality rates for American Indians for 1984-1986, in comparison with selected U.S. populations. For that period, mortality rates for White Americans were 19 percent higher than those of American Indians in the 65 to 74 age group, 22 percent higher in the 75 to 84 age group, and 45 percent higher in the 85 and over age group. This contrasts with the young adult group (25 to 34), in which American Indian death rates were 121 percent higher than those for Whites. Estimates of life expectancy at age 65 are not available for American Indians.

2. Disease-specific Mortality

The discussion in this section is confined to the ten leading causes of death in 1986 in the older population. For more general information on mortality, including age-adjusted rates, see Chapter II, Vital Statistics, and Chapter V, Chronic and Acute Disease Conditions.

Because deaths in the older population dominate national mortality data, the three leading causes of death among older Americans are the same causes that prevail in the population at large: (1) diseases of the heart, (2) cancer, and (3) cerebrovascular diseases (see Table 9). For those over 85, cerebrovascular disease outranked cancer as the second leading cause of death. (4) The order for the

fourth through seventh causes is also the same in the older and general populations, except that in the older population COPD (fourth cause), pneumonia and influenza (fifth), and diabetes (sixth) precede injuries (fourth in the general population). The last three causes in the older population—atherosclerosis, kidney diseases (nephritis, nephrotic syndrome, and nephrosis), and septicemia—rank tenth, eleventh, and thirteenth, respectively, in the general population. (See Chapter II, Vital Statistics, for further information on leading causes of death in the general population.)

Among persons age 65 and older, sex-specific death rates from all causes are higher for Blacks to age 85; at age 85 and older the death rates for Whites are higher. This pattern applies also for heart diseases, cerebrovascular diseases, pneumonia and influenza, injuries, and atherosclerosis, although in several instances, at age 75 to 84, the differences are very small. For diabetes, nephritis, and septicemia, sex-specific death rates are higher for Blacks at all age groups above 64, for both sexes. Sex-specific death rates from COPD are substantially lower for Blacks in all age groups above 64, for both sexes. For malignant neoplasms, sex specific death rates are in the main higher for Blacks, except that rates are lower for Black females than for White females 85 and over.

Death rates from all causes are generally higher for males than for females in all race and age groups. Exceptions are Black females, who have substantially higher death rates than males from diabetes at all age groups above 64. Also, female death

rates are higher than male death rates in the 85 and over age group for Whites and Blacks who die from cerebrovascular diseases, and for Whites who die from atherosclerosis.

Table 10 shows death rate data for leading causes of death of American Indians and Alaskan Natives 65 years and over in Reservation States. For the first four leading mortality causes in the U.S. older population overall—heart disease, cancer, cerebrovascular disease, and COPD—the Native American death rates are 30 percent to 40 percent lower than the U.S. rates. However, specific causes for which there was higher mortality were diabetes, injuries, kidney diseases, and chronic liver disease and cirrhosis.

In addition to the rates shown in Table 10, 1984-86 data on alcoholism as a direct cause of death indicate that older American Indians and Alaskan Natives in Reservation States have much higher mortality rates from this cause when compared to the U.S. population as a whole. Native Americans age 65 to 74 had mortality rates from alcoholism that were 170 percent higher than the general population of the same age, and Native Americans age 85 and over had rates that were more than 500 percent higher. (10) A disparity in mortality rates from alcoholism between older Native Americans and the older general population exists for both sexes, and its size is substantially larger for females, except at ages 85 and over, wherein Native American women have lower mortality from alcoholism than all U.S. women. (10)

D. Morbidity

Measures of morbidity in the older population include prevalence rates for chronic conditions and impairments, and percentages reporting activity limitation. In addition, self-assessed health status can be used as an indicator of morbidity.

1. Chronic Conditions

Chronic conditions are highly prevalent in the population 65 and over. Nearly half of all White and Black older Americans reported being afflicted with at least one chronic disease, arthritis, in 1988 (see Table 11). One-third of Whites but more than half of Blacks reported having high blood pressure. Diabetes was reported by nearly one in five Blacks, which was more than twice the proportion in Whites. As noted in the section on mortality, age-specific diabetes death rates in many cases were at least twice as high for Blacks as Whites. Fewer Blacks than Whites, however, said they had heart disease (22.4 percent vs. 30.3 percent). This contrasts with the higher heart disease mortality rate in Blacks discussed earlier.

Chronic bronchitis, hardening of the arteries, cerebrovascular disease, emphysema, and kidney trouble were generally reported by about 5 percent or fewer Whites and Blacks. Among these conditions, only the respiratory diseases appear to be more prevalent in Whites. For cerebrovascular disease, hardening of the arteries, and kidney trouble, rates for Blacks may be similar to or higher than for Whites. The patterns in Table 11 are alike in both age subgroups, 65 to 74 and 75 and over.

Because chronic conditions frequently continue undiagnosed, making data based on self-reports potentially unreliable, it is also useful to refer to other sources in making racial comparisons. Data from the second National Health and Nutrition Examination Survey (NHANES II) for 1976–1980 show that prevalence rates for hypertension among persons 65 to 74 years old, based on actual physical measurements, were highest for Black females (82.9 percent), followed by Black males (67.1 percent), White females (66.2 percent), and White males (59.2 percent). However, differences between racial groups were smaller in the age category 65 to 74 years than in the age category 35 to 44 years. (11)

NHANES II revealed that the prevalence of undiagnosed diabetes (i.e., diabetes found upon testing but not known to the survey respondent) was about equal to the prevalence of diagnosed diabetes in the U.S. White and Black populations age 20 to 74. (12) Thus, the diabetes rates in Table 11 may be vastly underestimated. The prevalence of undiagnosed diabetes in the age group 65 to 74 was one-third higher in Black males than White males, and two-thirds higher in Black females than White females. For both sexes, the Black excess was 54 percent. (12) In diabetes, the single most important risk factor is obesity, which is disproportionately prevalent among Black women of all ages. (13) Diabetes is also a serious health problem among Hispanics. Data from the 1976 National Health Interview Survey (NHIS) indicated that among older Hispanics age 65 to 74, 13.4 percent were diagnosed

diabetics, compared to 8.4 percent of the general population. (14)

There is some evidence that diabetes in the older population is inversely related to income and educational attainment. (15) For example, socioeconomic status and diabetes have been shown to be inversely related for Mexican Americans. (14)

Data on cancer incidence, collected by the Surveillance, Epidemiology, and End Results (SEER) program and analyzed by Baquet, suggest that for all cancers combined, Black males have a higher incidence rate than White males until age 75; the same is true for lung cancer, one of the most common cancers in men. (16) After age 40, Black females have lower incidence of breast cancer than White females. At all ages Black females have higher rates of invasive cervical cancer, but the Black-White disparity is much greater among the older population. For many other forms of cancer, such as esophageal, pancreatic, and stomach cancer, rates for Blacks are higher at all ages. (16)

2. Impairments

As with chronic conditions, impairments are far more common among the older population than among the younger population, and the prevalence tends to increase with age. According to data from the 1988 NHIS, hearing impairments, cataracts, and orthopedic impairments ranked first, second, and third, respectively, among the ten leading impairments causing activity limitations for older persons (Table 12). Older Blacks are more likely to be visually impaired, to have glaucoma, and to have missing extremities. Rates appear to be slightly higher

for Blacks for speech impairments and paralysis of extremities. Whites are found to have higher rates for cataracts, hearing impairments, tinnitus, and orthopedic impairments. These differences seem to hold across both the 65 to 74 and 75 and over age groups.

Some impairments in the older population appear to vary by income (Table 13). Visual impairments, cataracts, and orthopedic impairments are more common in the two low-income groups (under \$10,000 and \$10,000 to \$19,999) than in the two higher-income groups (\$20,000–\$34,999 and \$35,000 or more).

The prevalence of certain impairments may to some extent reflect previous occupational exposures, which, in turn, are correlated with income in old age. For example, absence of extremities may be exceedingly rare in the highest income group, relative to the three lower-income groups. Impaired hearing is most common in the second-lowest income group.

For the more common impairments, data reliability is stronger, and these cases illustrate that prevalence tends to increase between ages 65 to 74 and 75 and over, across the income groups.

3. Limitation of Activity

Another important indicator of overall health status for the older population is self-reported activity limitation, defined as long-term reduction in activity resulting from chronic disease or impairment. Such limitations are ordered by severity from most extreme—those unable to carry out a major activity for their age-sex group—to those with no limitations at all. Limitation of activity is

relatively common among older persons. In the 1988 Health Interview Survey, 37.0 percent of those 65 and older as opposed to 13.7 percent of all persons and 22.4 percent of persons 45 to 64 years old reported that they were limited in their activities to some degree (Table 14). According to the statistics in Table 14, the percent with any limitation tends not to increase with age beyond age 64. For the more severe categories, such as "unable to carry on major activity," the percent actually declines. This pattern probably results from relatively high mortality at younger ages among persons with limitations, especially severe ones.

In both age groups above 64 shown in Table 14, approximately one third more Blacks than Whites reported limitation of activity. Blacks were approximately 50 percent or 60 percent more likely than their White counterparts to report limitations in a major activity. About twice as many older Blacks as Whites reported themselves completely unable to carry on a major activity. Activity limitation is also more serious among older Hispanics. A 1988 Commonwealth Fund survey found that they were almost twice as likely to report difficulties with basic self-care activities as all older persons. (7) Examining the data on the degree of activity limitation by income indicates that as the income of older persons increased from under \$10,000 to \$35,000 or more, the percentage of persons reporting no activity limitation increased; conversely, the percentage of persons reporting any activity limitation decreased steadily as income rose.

Income tends to affect many of the other limitation categories in the same way. For example, among persons age 65 to 69, the proportion unable to carry on a major activity decreased from 29.3 percent among those in the lowest-income group to approximately 7 percent to 8 percent among those in the two highest-income groups. The large variation by income suggests that income might account for much of the observed race differences. However, a study of low-income aged persons, using Census Bureau data, found obvious race differences nonetheless. Older Blacks in the sample were generally found to be in poorer health than older Whites, "whether health is defined in more objective or subjective terms. Older Blacks and Whites do not differ substantially in the number of reported chronic conditions that afflict them or in the likelihood of having a serious illness, but the illnesses are more functionally debilitating to Older Blacks than Whites. Older Blacks are more limited in their daily functioning by health problems, and therefore are more likely to rate their health as poor." (17)

4. *Self-assessed Health Status*

Even though older persons frequently have chronic disease, impairments, and activity limitations, only a minority of those 65 and older consider themselves to be in poor health. Most older Americans report themselves to be in good health compared to others in their age group. However, in the later years health status appears to vary with race and income, as it does earlier in life.

According to the 1988 NHIS, there are relatively

small differences in the proportions of Whites and Blacks of all ages reporting excellent or good health—91 percent and 85 percent, respectively. However, after age 65, 72 percent of Whites report themselves to be in excellent or good health compared to only 52 percent of Blacks (Table 15). Older Blacks reported poor health more than twice as often as Older Whites in 1988. Overall, the older population represents a disproportionately large share of those who report their health as fair or poor and a disproportionately small share of those who report their health as excellent or very good. Data from another source suggest that older Hispanics are in generally worse health than other older persons; 54 percent of older Hispanics surveyed by the Commonwealth Fund Commission in 1988 reported fair or poor health compared with 35 percent of all older persons. Sixty-three percent of older Puerto Ricans in the Hispanic sample reported fair or poor health. For the Cuban American and Mexican American subsamples, the percentages were 46 and 54, respectively. (7)

In addition to race and ethnicity, income is strongly related to self-assessed health status among older Americans; 11.7 percent of persons 65 and over with incomes under \$10,000 reported excellent health compared to 25.1 percent with incomes of \$35,000 or more. Conversely, the percentage of older persons who reported themselves in poor health was negatively related to income; more than twice as many older persons (15.0 percent) with incomes under \$10,000 reported poor

health compared to older persons with incomes of \$35,000 or more (6.3 percent). However, self-assessed health status appears less strongly related to income among older persons than other age groups. For example, whereas in the older population the disparity in the percent reporting excellent health is 115 percent between the highest and lowest income groups, in the middle-aged population, 45 to 64, the disparity is 270 percent.

Because minorities tend to have lower incomes than others and because self-assessed health status is positively associated with income, part of the Black and White differential noted above, as well as the Hispanic and White differential, probably stems from income differences and not race or ethnicity.

E. *Health Habits and Social Factors in the Health of Older Populations*

Health behaviors and social factors play an important role in maintaining health later in life. This section reviews data pertaining to each.

1. *Health Habits*

According to self-reports, older persons have more favorable health habits than the rest of the population (Table 16). Those over 64 were least likely of all adult age groups, and by a substantial margin, to report high alcohol consumption. Those 65 and older in all sex, race, and ethnic categories are less likely than younger persons to smoke cigarettes. The older population is also less likely than the middle-aged population to be overweight or obese. Higher premature mortality due to such risk factors may help

account for the observed age-related differences.

Precise measurement of alcohol consumption in the older population is hindered by the low frequency of this behavior. Therefore, the following statistics on drinking by race/ethnicity must be regarded with caution. Results from the 1985 NHIS were that 10.9 percent of White males, 8.2 percent of Hispanic males, and 3.6 percent of Black males reported the consumption of one or more ounces of alcohol daily, as did 3.0 percent of White, 3.1 percent of Hispanic, and 0.2 percent of older Black women. (18) However, when asked if they had consumed five or more drinks in one day at least five times in the past year, 45.5 percent of older Hispanic males, 20.8 percent of Black males, and 14.2 percent of White males responded affirmatively. This may point to racial and ethnic differences in drinking patterns rather than in drinking levels. With the exception of Hispanic males, the percentages for the 65 and over groups were the lowest reported for any of the age groups. (18)

Researchers are now investigating the extent to which alcoholism poses special problems among the older population; that is, whether it is in some sense a different disease for the older population than it is for the younger population. In spite of the lower overall drinking rates among older persons, alcoholism poses a problem for some older minority males. Profiles of older and younger alcoholics suggest that the older alcoholic is "more likely to be Black, less educated and from a rural residence than his or her younger counterpart." (19) Compared to the overall older population, he or she is more

likely to be in the younger age ranges of the older population (age 60 to 74), male, minority, separated or divorced, living with someone, and poorly educated (less than a high school education). (19)

With respect to smoking, for males 65 and older, 27.8 percent of Blacks, 20.0 percent of Hispanics, and 18.9 percent of Whites report themselves current smokers. Among females of this age, the order appears to be different: 14.5 percent of Blacks, 13.3 percent of Whites, and 6.9 percent of Hispanics report themselves current smokers. (18) For those smoking 25 or more cigarettes per day, however, almost four times as many White males (28.2 percent) as Black males (7.8 percent) report such heavy smoking. No Hispanic males in the sample reported this level of cigarette consumption. White women over 65 are also much more likely than either Black or Hispanic women to be heavy smokers (14.9 percent vs. 1.1 percent and 6.9 percent). (18) Again, low reliability for some statistics requires that comparisons be regarded cautiously. However, these data parallel findings in the general population of smokers showing particularly high consumption among Whites.

With respect to obesity (defined as body mass index 28.49 and over for males, and 35.29 and over for females), according to NHANES II (1976-1980), 10.9 percent of White males, 18.8 percent of White females, 18.6 percent of Black males, and 38.5 percent of Black females over 64 were measured to be obese. In comparison, 16.2 percent, 22.0 percent, 23.7

percent, and 50.0 percent, respectively, in the 55- to 64-year-old age group were found to be obese. (20)

It is clear that older Black women are especially likely to be obese. This unfavorably affects their health status in a number of areas (e.g., diabetes, hypertension). The greater prevalence of obesity among older Black women has been puzzling to researchers, since data on nutritional intake do not indicate great differences between older Black and White women, and, if anything, suggest reduced caloric consumption on the part of the former. (21) Further research in this area is required to understand this phenomenon.

A study of self-reported dietary intake, in fact, showed few significant racial differences in the foods eaten by persons age 65 to 74 years (Tables 17 and 18). Nevertheless, sugar products were somewhat more important and vegetables somewhat less important in the diets of older Blacks when compared with Whites. The diet of most Black females was limited in protein, iron, potassium, and phosphorous. The diet of Black males 65 to 74 was low in iron and potassium. (21) For several other dietary components, people age 55 to 75, regardless of race, had inadequate intakes.

NHANES I (1971-74) and NHANES II revealed that total fat intake and saturated fat intake is lower for Blacks than Whites for both age groups and both sexes (Table 19). Intake of linoleic acid is the same or lower for Blacks, compared to Whites, for both age groups and both sexes. Comparison of cholesterol intake between the races varies with age group and sex, but race differences are generally small, on the order

of 10 percent to 15 percent. With the exception of Black females age 56 to 64, cholesterol consumption in the White and Black older populations apparently declined in the period between the two NHANES surveys.

Jerome, reviewing results of national surveys as well as small-scale comparison studies, concluded that on balance older Blacks, especially older Black women, are more likely than older Whites to show specific nutritional inadequacies, and that this is strongly associated with their lower socioeconomic and educational status. (21)

2. Psychological Well-being, Mental Health, and Social Support

The mental health and psychological well-being of older persons, especially of older low-income and minority persons, is a subject still poorly understood in spite of increasing research in this area in recent years. The subject is complicated by cultural stereotypes about aging and by the difficulties in interpreting subjective measures of well-being across ethnic and racial group boundaries.

A review of the literature on older Blacks, Mexican Americans, and Native Americans concluded that the mental health and life satisfaction of these groups is not any lower than might be anticipated based on their relative socioeconomic standing. (22) For many reasons, the review found, it is risky to assess rates of mental disorders from rates of utilization of mental health facilities or to rely on subjective measures of well-

being in evaluating disadvantage, since these are usually a function of reference group orientation. (22)

A recent thrust in the literature emphasizes the positive role of informal emotional and material support from relatives, friends, neighbors, and fellow parishioners in maintaining and enhancing both physical and psychological well-being of older persons. It has been suggested that, given their more extensive and flexible helping networks (as indicated for example, by older minority females' greater tendency to live with relatives if they are single) older members of racial and ethnic minorities may be relatively advantaged in this regard when compared to the rest of the older population. In a review of this topic, Gibson and Jackson found that informal support networks among older persons in the Black community were indeed rich and resilient. Support was positively related to functioning, "having differential effects depending on its type, amount, frequency, and perceived availability." (23) In addition, support networks were found to expand and diversify with age in the older Black population. (23)

F. Access to and Utilization of Health Care by Older Persons

1. Insurance Coverage and Expenditures

Because health care is an expensive service, having insurance that covers health care bills strongly influences an older person's use of services. (24) The following review of coverage rates and costs among the older population will provide some background on the utilization patterns discussed later.

Two public programs, Medicare and Medicaid, comprise the major health coverage schemes for older persons in the United States today. Medicare, which is open to Social Security and Railroad Retirement System participants, was enacted in 1965. For the first time, under Medicare, health insurance became available to all older Americans on a wide scale. A federal program, it is the * most important source of health care assistance for the aged.

The Medicaid program, operated by the states and financed jointly by the federal and state governments, also originated in 1965 and provides public assistance health coverage to some of the poor, blind, or otherwise disabled individuals who have low incomes. (Further background information about the basic financial and coverage features of Medicare and Medicaid is provided in Chapter XII, Health Insurance Coverage and Health Care Expenditures.)

Medicare's focus is strictly on curative services; it does not pay for all primary and most secondary preventive services, such as hearing, dental, podiatry, and eye preventive services, and periodic screening. Another service not covered by Medicare is the cost of prescription drugs. One survey found that 40 percent of older persons with only Medicare insurance spent more than \$369 on prescription drugs in 1986. (25) The potential for high out-of-pocket costs, due to gaps in Medicare's coverage and mounting copayment costs for extended illness or high-cost treatment, leaves Medicare beneficiaries financially vulnerable. As a

result, many purchase additional private insurance or obtain it as part of their retirement benefits. This coverage is known as Medigap insurance.

Table 20 shows health care coverage for various groups of older Americans by type of coverage. In 1986, almost all, 95.3 percent, had Medicare coverage, with or without public or private supplemental insurance. Only 83 percent of older Hispanics surveyed reported Medicare coverage in 1988, compared with 96 percent of all older Americans. (7)

Among older Americans generally, 17.9 percent had Medicare coverage alone. Older Blacks were more than twice as likely as older Whites (34.9 percent and 16.1 percent, respectively) to rely exclusively on Medicare; 28 percent of older Hispanics surveyed by the Commonwealth Fund Commission in 1988 had Medicare coverage only. (7) Conversely, more than twice as many older Whites compared to older Blacks (75.4 percent vs. 34.2 percent) had supplemental private insurance along with Medicare, and more than three times as many older Whites compared to older Hispanics had supplemental insurance. (7) Among persons 65 and over who do not receive support from Medicaid, only 49 percent of Blacks supplement their Medicare privately, but 82 percent of Whites do so.

The lower likelihood of private insurance among minorities is partly attributable to income. The average annual private insurance premium is not as affordable among minorities, with their lower incomes relative to Whites. (26) Insurance company data covering 2.5 million Medigap subscribers show that the 1989

premiums, which averaged \$705, are expected to increase to an average of \$832 in 1990. Just over 15 percent of this average 18 percent increase is attributed to repeal of the Medicare Catastrophic Coverage Act of 1988. Given that the median income of older Americans was \$8,469 in 1987, this would mean that the average Medigap policy is approximately 10 percent of the older American's median income. (27) However, even after adjusting for income, older Blacks are less likely than older Whites to be privately insured. This difference may be partly traceable to Blacks' employment histories in jobs that did not provide comprehensive retirement benefits. (28)

Table 20 also shows differences in type of coverage by family income. Older persons with incomes over \$10,000 were 50 percent more likely than their poorer counterparts to have supplemental private insurance. More than one quarter (27.1 percent) of older persons with incomes below \$10,000 relied exclusively on Medicare coverage, compared to less than 20 percent of older persons overall, reflecting the fact that only a portion of all poor older persons were eligible for Medicaid and that many poor older persons could not afford private insurance.

Estimates of coverage among the older population with incomes below the poverty threshold in 1984 show that 29 percent had Medicaid coverage. (26) Another 29.4 percent had Medicare only, and the remainder had Medicare in combination with private insurance. Age also

influences the coverage combination. From 15.7 percent with Medicare-only at age 65 to 74, the proportion rises to 29.6 percent at age 85 and above.

The proportion of the older population with dual public coverage (i.e., both Medicare and Medicaid), at 5.8 percent, is small. Medicaid is a means-tested program and, currently, eligibility varies widely across the states. By race, Medicaid enrollment is nearly five times as likely among older Blacks as it is among older Whites (approximately one in four Blacks vs. one in 20 Whites in 1986 (29)) reflecting the lower socioeconomic status of older Black Americans. Under the dual coverage arrangement, Medicaid pays for Part B premiums and copayments, as well as for Medicaid-covered health services not available under Medicare. Depending on state provisions, such services may include dental care, prescription glasses, and hearing aids. The older poor population without Medicaid spend on average 24 percent of their incomes on medical expenses, more than twice as much as their counterparts with Medicaid. (26) Thus, this dual coverage is an important factor in medical cost protection for a portion of the poor and minority aged.

The uninsured older population, persons not even qualifying for Medicare, are a small proportion (less than 1 percent) of the older population that faces tremendous financial risks in obtaining medical care. NHIS estimates put the uninsured older population at 229,000 in 1984, (30) and Long has estimated that the number of uninsured older Blacks is 100,000 (31). Many of these

individuals have few resources to pay for care because they have low incomes. Of the 229,000 noncovered older persons, at least 87,000 had incomes below the federal poverty threshold in 1984. (30) About half the uninsured older population surveyed claimed that the prohibitive cost of health insurance coverage was the main reason that they remained uninsured. (30)

Recent tabulations from the 1985 Current Population Survey suggested that 2 percent of older Blacks were uninsured compared to 1 percent of older Whites. Another survey (7) suggested that 8 percent of all older Hispanics had no health insurance.

In summary, nearly one out of five older Americans, about 5.2 million persons in 1986, had only Medicare coverage. Perhaps another quarter million had no coverage at all. These groups are disproportionately comprised of minority and low-income populations and persons age 85 years and older. Without supplemental coverage, and living on generally limited incomes, older minorities are at a disadvantage in financing health care, and may experience barriers to access. Consequences may include delay in seeking care. Without any coverage at all, at least 87,000 older poor persons are very disadvantaged in obtaining medical care.

(Chapter XII, Health Insurance Coverage and Health Care Expenditures, discusses in greater detail the role of employment-related health insurance coverage for older retirees, the status of coverage of older poor minorities, and the effects of inadequate coverage on health care utilization and health status of older Americans.)

2. Ambulatory Care Utilization

Most medical care occurs in doctors' offices, hospital outpatient clinics, and other non-inpatient sites. Physician contacts, or visits, are therefore recognized as a general indicator of medical care utilization. While health status is probably the most important predictor of ambulatory care use, (32) additional influences have been noted, such as the types of care promoted by an individual's insurance coverage, physical accessibility of ambulatory sites, and physician practice patterns.

Overall, according to data from the 1988 NHIS presented in Table 21 and data from a 1988 Commonwealth Fund Survey, (7) older Blacks and older Hispanics had more annual physician visits per person than older Whites. This may partly reflect the generally poorer health status of the older minority population. The higher frequency of physician visits by older minorities is a reversal of the pattern for the total population, in which Whites had more physician visits, on average.

The "place of contact" varies by race, in that, although older White and Black persons were about equally likely to see physicians in their private offices, older Whites appear more likely to have telephone consultations, while their Black counterparts are more likely to contact a physician in hospitals and in places other than private offices. Such "other" settings include homes, public (non-hospital) clinics, and HMOs not located in hospitals. The difference between Blacks and Whites in hospital-based physician visits is smaller than the

difference between the total White and Black populations.

For the older population, there was no difference in per-person physician visits in 1988 based on income level, reflecting the almost universal availability of Medicare for all older individuals. The two higher income groups are more likely than others to use telephone consultations, and the lowest income group was most likely to see physicians in "other" settings.

3. Hospital Utilization

Before the enactment of Medicare and Medicaid, about half of the aged had no private health insurance. (33) Under these programs, there was a dramatic increase in hospital utilization by the aged, particularly among the most disadvantaged groups—low-income older persons living alone, minorities, and rural and Southern residents. (33)

Currently, hospital utilization by minorities is still lower on average, but the differential is small. However, similar utilization rates for the race groups may signify more unmet need among minorities, because their generally poorer health status might actually require greater utilization of services.

Table 22 shows hospital discharges and other hospital utilization data from two sources: NCHS's 1986 National Hospital Discharge Survey (NHDS) and the Health Care Financing Administration's (HCFA) Medicare data for 1984. Race-related differences in the HCFA data should be analyzed with caution because the racial description is unavailable for about 10 percent of the discharges.

The NHDS data suggest that minority older males and White older males have similar hospital utilization,

whereas White older females were higher utilizers than minority older females. The HCFA Medicare data suggest that overall, older Whites use the hospital somewhat more than older Blacks. Both data sets indicate, however, that the average length of stay in a hospital (ALOS) is longer for minority older Americans. The ALOS is often considered an indicator of severity of illness, but to a lesser extent it may also reflect other factors such as local medical care practices and the availability of post-hospital supportive care.

Lower incomes and less insurance protection help explain the lower minority discharge rates. As noted earlier, older minorities have lower incomes and are much more likely than others to have Medicare coverage without supplemental insurance. The Medicare deductible for a hospitalization, \$520, which must be paid out of pocket or by supplemental insurance, may thus inhibit hospital use among minorities, especially. (26)

4. *Nursing Home Utilization*

Nursing home care can provide either medical support for convalescing individuals or ongoing medical and personal care for permanently infirm older persons. Skilled nursing facility (SNF) services, considered by Medicare a type of post-hospital care for convalescing patients, are covered by Medicare for up to 100 days per stay. Thereafter, or for the permanently infirm, Medicaid can assume financial responsibility. To receive Medicaid assistance for nursing home care, the patient must be a Medicaid

enrollee. Often he or she has become impoverished as a result of nursing home costs, thereby becoming eligible for Medicaid. Medicaid financed more than one third of nursing home care for the older population in 1987. Medicare paid for only 1.9 percent. (34)

Table 23 shows persons served by skilled nursing facilities (SNFs) under Medicare, and Medicare reimbursements, admissions, and covered days of care for 1984. In terms of the rates of persons served, and the admissions per 1,000 enrollees, utilization among older Whites exceeded that of older minorities. However, the mean covered days of care shows that, once inside the nursing home, minorities stay more than three days longer on average, and the nursing home reimbursement is more than 12 percent greater. A pattern of more intensive care per minority user was also noted above with respect to hospital care.

The 50 percent higher use rate of Whites, partly offset by the longer stays of Blacks, results in 31 percent higher SNF reimbursements per enrollee for Whites. As an indicator of utilization, the race difference in per-enrollee reimbursement points to nursing home care as the area of service where inequality of utilization under Medicare is greatest. The extent to which this difference reflects differing age distributions, demand for services, discrimination, epidemiological, or other factors is unknown. (8) One probable contributor is the lower hospitalization rate among minorities, even in the presence of more chronic illness in this population. As noted earlier, Medicare coverage of skilled nursing care is oriented to post-hospital care.

Another source of data on nursing home utilization is the National Nursing Home Survey (NNHS). Most recently conducted in 1985, it reflects a broader range of nursing home utilization than does the Medicare data, including intermediate care facilities (ICF), as well as nursing homes and personal care homes not certified as either SNF or ICF. (35) (ICFs are institutions furnishing less complex health-related care than SNFs. Personal care homes do not provide medical services but do assist residents in self-care tasks.)

Using data from the NNHS, Table 24 indicates that the actual percentages of Whites and Blacks that comprised the nursing home population in 1985 were 93.1 percent and 6.2 percent, respectively. In 1985, 5 percent, 4 percent, and 2 percent, of older Whites, Blacks, and other races, respectively, resided in nursing homes. The difference in the rates of nursing home residency becomes greater with age; 23 percent of Whites age 85 and over, compared to 14 percent of Blacks in this age group, lived in nursing homes. (36)

It has been suggested that "this lower use by elderly Black people and those of other races may result from substitution of informal care at home for formal nursing home care". (36) Data from the 1982 Long-Term Care Survey indicate that minorities living in the community were more likely to be functionally impaired than Whites. This may imply that, first, minorities are disproportionately represented among people most at risk for entering a nursing home and second, that perhaps minorities enjoy

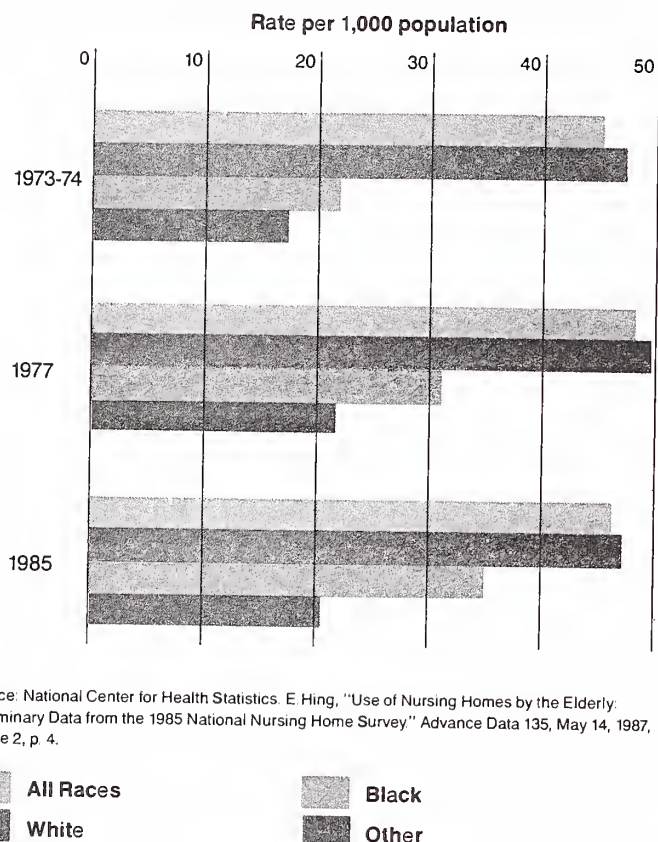
a more extended support system which maintains them at home. (36) Alternatively, the data may mean that minorities are receiving less nursing services and, therefore, their unmet needs are greater.

Historical data suggest that the factors accounting for lower use among older Blacks, whatever they may be, are becoming less important. Figure 4, based on three successive national surveys, shows that the likelihood that older Blacks will use nursing homes has increased dramatically since 1973, while rates for Whites and those of other races have changed minimally.

Although racial differences in median length of stay in nursing homes in 1985 were not statistically significant, (37) other survey results suggest that minority nursing home residents require more intensive care, even though older White residents tend to be slightly older. (36) The mean ages of White and Black older nursing home residents in 1985 were 83 and 81 years, respectively. Table 25 shows that older Black residents were more frequently dependent on others for personal care and mobility than Whites. Dependencies included needing assistance in bathing, dressing, toileting, and other self-maintenance. Their average number of dependencies was 4.2, compared to 3.9 among Whites. As with the race differential for nursing home utilization rates, this difference may be related to the fact that proportionately more of the dependent older minorities reside in the community, so that only those with the severest dependency enter formal nursing care institutions.

Figure 4

Number of nursing home residents per 1,000 population 65 years of age and over, by race: United States, 1973-74, and 1985.



5. Utilization of Home Health Care

Data concerning use of home health care services consistently report a greater prevalence of functional impairment among the noninstitutionalized minority aged. Home health care, intended for people confined to the home, is used more often by this group. This health care category includes skilled nursing care or physical or speech therapy, home health aide services, medical supplies, the use of medical appliances, and others.

Medicare data for 1984 indicate that minorities were 28 percent more likely than Whites to use home health services; (38) 64.9 per 1,000 minority enrollees were served compared to 50.6 per

1,000 White enrollees. Despite this utilization differential, it has been pointed out that home health care is a very small portion, about 3 percent, of all Medicare-reimbursed services. (28)

6. Hospice Use

Medicare began offering limited benefits for hospice care in 1984. Hospices are intended as a substitute for more expensive types of care typically used by terminally ill patients, particularly inpatient care and SNF services. Organized as a public or private agency, the hospice provides pain relief, symptom management, and supportive services to the patient and family. (39)

Since Congress initiated the hospice benefit in 1984, annual usage increased from 2,000 persons served to 11,000 persons served by 1987. (39) Although data on hospice utilization per capita or per terminally ill beneficiary are not available, hospice utilization is certain to be far lower than even SNF use, which was 10.7 per 1,000 persons 65 and over in 1984. (38) Table 26 shows the available data, which consist only of the relative frequencies of hospice users by race. The data show that hospice users were 10.9 times more likely to be White than minority, a ratio similar to that found in the aged beneficiary population in 1984. (38) The hospice average length of stay (ALOS) for Whites and Blacks appears similar, but for other races it was substantially lower in 1985.

Further insight on hospice use comes from an analysis of the 1980-82 National Hospice Study. (40) In this study, it was found that minority patients were less likely than White patients to choose hospices run by hospitals, which cost more than freestanding hospices or hospices managed by home health agencies. The authors qualified their findings as follows:

"The association of minority status with choice of home care is consistent with the voluminous literature noting that Blacks underutilize nursing homes and regarding the solidarity of the Hispanic family support structure. Nonetheless, a minority's choice of hospice type appears to vary by geographic region, . . . Since minorities represented less than 10 percent of the population in most hospices, the

observed differential choice pattern may be an artifact". (40)

Because the Medicare hospice benefit is still new, many hospices eligible for Medicare certification have not yet joined the program. Hospice utilization may well evolve in ways quite different from the preliminary patterns sketched here.

G. Social and Economic Cost Implications

Data for the major services covered under Medicare are shown in Table 27 by selected demographic characteristics. On a per-enrollee basis, for aged minorities, reimbursements were 6 percent greater for hospital care, 51 percent greater for outpatient care, and 57 percent greater for home health agency services in 1984. Only for skilled nursing facility services and physician services were the reimbursements per enrollee for minorities lower. Table 27 suggests that minorities have yet to "catch up" to Whites in their use of hospitals (212.7 persons served per 1,000 for minorities vs. 230.6 for Whites). Overall, reimbursements per enrollee were 6 percent higher for minorities than Whites. Considering minorities' relatively poor health status, this differential may still not mean that equity in access to care has been achieved. It may also imply more unmet need among minorities.

The health of older Americans is of increasing importance to policymakers and planners as the United States moves into the next century. One reason is that, as we have seen, the health care needs of older persons are greater than those of other demographic groups,

and older persons are a growing segment of the U.S. population. By the year 2030 people 65 and over will comprise one out of five Americans. There is concern that a reallocation of health as well as social resources will be required to meet the growing needs of an older population. Furthermore, improving the older population's health will be an important means of improving

the quality of life in U.S. society.

It has been noted in this chapter that Blacks and other minorities, with their relatively poorer health status, will make up an increasing proportion of a growing older population in the coming decades. The implications for resource use in the society at large are clear—more expenditures will be needed

to serve this larger older population, of whom a growing proportion may be in poor health. Investment in health care services, health promotion and disease prevention, environmental health, and preventive services for minorities and low-income populations earlier in life would appear to be one optimal long-term solution.

Table 1

Actual and projected growth of the older population: 1900–2050
[Numbers in thousands]

Year	Total population all ages	55 to 64 years		65 to 74 years		75 to 84 years		85 years and older		65 years and older	
		Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent
1900	76,303	4,009	5.3	2,189	2.9	772	1.0	123	.2	3,084	4.0
1910	91,972	5,054	5.5	2,793	3.0	989	1.1	167	.2	3,950	4.3
1920	105,711	6,532	6.2	3,464	3.3	1,259	1.2	210	.2	4,933	4.7
1930	122,775	8,397	6.8	4,721	3.8	1,641	1.3	272	.2	6,634	5.4
1940	131,669	10,572	8.0	6,375	4.8	2,278	1.7	365	.3	9,019	6.8
1950	150,967	13,295	8.8	8,415	5.6	3,278	2.2	577	.4	12,270	8.1
1960	179,323	15,572	8.7	10,997	6.1	4,633	2.6	929	.5	16,560	9.2
1970	203,302	18,608	9.2	12,447	6.1	6,124	3.0	1,409	.7	19,980	9.8
1980	226,505	21,700	9.6	15,578	6.9	7,727	3.4	2,240	1.0	25,544	11.3
1990	250,410	21,364	8.5	18,373	7.3	9,933	3.9	3,254	1.3	31,559	12.6
2000	268,266	24,158	9.0	18,243	6.8	12,017	4.5	4,622	1.7	34,882	13.0
2010	282,575	35,430	12.5	21,039	7.4	12,208	4.3	6,115	2.2	39,362	13.9
2020	294,364	41,087	14.0	30,973	10.5	14,443	5.0	6,651	2.3	52,067	17.7
2030	300,629	34,947	11.6	35,988	12.0	21,487	7.1	8,129	2.7	65,604	21.8
2040	301,807	35,537	11.8	30,808	10.2	25,050	8.3	12,251	4.1	68,109	22.6
2050	299,849	37,004	12.3	31,591	10.5	21,655	7.2	15,287	5.1	68,532	22.9

Source: U.S. Bureau of the Census. Gregory Spencer, "Projections of the Population of the United States, by Age, Sex, and Race: 1988 to 2080." Current Population Reports Series P-25, No. 1018, Jan 1989. 1900 to 1980 data from the Decennial Censuses of the Population.

Table 2

Population estimates for Whites and Blacks age 65 and over, by age, sex, and race: United States, 1987

	Male		Female		Percent in each age group who are female
	Population estimate		Population estimate		
	(In thou- sands)	Percent	(In thou- sands)	Percent	
White					
65 to 74 years	7,028	64	8,788	55	56
75 to 84 years	3,154	29	5,284	33	63
85 years and over	723	7	1,887	12	72
Total	10,905	100	15,959	100	59
Black					
65 to 74 years	647	66	871	59	57
75 to 84 years	268	27	442	30	62
85 years and over	69	7	152	10	69
Total	984	100	1,465	100	60

Note: Data in columns two and four may not add up to 100 due to rounding.

Source: Abstracted from U.S. Bureau of the Census, United States Population Estimates by Age, Sex, and Race: 1980 to 1987. Current Population Reports: Series P-25, No. 1022, Washington, DC, U.S. Department of Commerce, Table 2.

Table 3

Living arrangements of older people, by age, sex, race, and Hispanic origin: United States, March 1988*

Living arrangement	65-plus		65 to 74		75-plus	
	Male	Female	Male	Female	Male	Female
All races						
Total (thousands)	11,837	16,691	7,736	9,736	4,101	6,955
Percent	100.0	100.0	100.0	100.0	100.0	100.0
Living with spouse	75.1	39.9	79.5	51.5	66.8	23.6
Living with other relatives	6.7	17.2	5.3	13.7	9.2	22.0
Living alone	16.2	40.6	13.1	33.2	21.9	50.9
Living with nonrelatives	2.1	2.4	2.0	1.7	2.1	3.5
White						
Total (thousands)	10,649	14,989	6,967	8,679	3,682	6,310
Percent	100.0	100.0	100.0	100.0	100.0	100.0
Living with spouse	76.2	41.0	80.6	53.3	67.8	24.1
Living with other relatives	6.4	15.6	5.1	12.0	8.9	20.6
Living alone	15.4	41.1	12.3	33.2	21.3	51.9
Living with nonrelatives	2.0	2.3	2.0	1.5	2.1	3.4
Black						
Total (thousands)	960	1,424	611	865	349	559
Percent	100.0	100.0	100.0	100.0	100.0	100.0
Living with spouse	62.5	27.1	65.5	32.9	57.0	18.1
Living with other relatives	8.6	30.8	7.5	27.9	10.6	35.4
Living alone	26.4	28.5	24.4	36.2	29.8	42.0
Living with nonrelatives	2.5	3.6	2.5	3.0	2.6	4.5
Hispanic origin ¹						
Total (thousands)	398	505	251	309	147	196
Percent	100.0	100.0	100.0	100.0	100.0	100.0
Living with spouse	65.8	35.4	69.3	43.0	59.9	23.5
Living with other relatives	16.1	33.9	13.5	30.4	20.4	39.3
Living alone	15.1	27.9	13.9	23.6	17.0	34.7
Living with nonrelatives	3.0	2.8	3.2	2.9	2.7	2.6

¹ People of Hispanic origin may be of any race.

Note: Percentage distributions may not add to 100.0 due to rounding.

* Excludes people in institutions.

Source: U.S. Senate Special Committee on Aging, "Aging America: Trends and Projections, Nov 1989," Serial No. 101-E, Table 5-2, p. 110. Based on unpublished data from the U.S. Bureau of the Census, Mar 1988 Current Population Survey.

Table 4

Number and percent of persons 65 and older with incomes below poverty, by race, Hispanic origin, sex, and living arrangement: 1987

Race and Hispanic origin	Living arrangement of persons below poverty level					
	Number (thousands)			Percent*		
	In families	Unrelated individuals	Total	In families	Unrelated individuals	Total
White:						
Male	440	289	729	5.0	15.6	6.8
Female	445	1,423	1,868	5.2	21.9	12.5
Total	884	1,712	2,597	5.1	20.5	10.1
Black:						
Male	119	117	236	17.4	42.2	24.6
Female	196	376	572	23.8	62.8	40.2
Total	315	493	808	20.9	56.3	33.9
Hispanic: ¹						
Male	63	30	93	19.3	(²)	23.4
Female	60	94	154	17.1	60.6	30.5
Total	123	124	247	18.2	54.4	27.4
All races:						
Male	586	416	1,002	6.1	19.3	8.5
Female	664	1,825	2,489	7.0	25.4	14.9
Total	1,250	2,241	3,491	6.1	24.0	12.2

¹ Hispanic persons may be of any race.

² Percentage not shown if base population is less than 75,000.

*Represents fraction of persons in each category whose income falls below poverty level.

Source: U.S. Senate Special Committee on Aging, "Aging America: Trends and Projections, Nov 1989," Serial No. 101-E, U.S. Government Printing Office, Table 2-6, p. 36 and U.S. Bureau of the Census, Mar 1988 Current Population Survey, prepared by Congressional Research Service.

Table 5

Median income of persons age 65 and older by age, race, and Hispanic origin

Race and Hispanic origin	Both sexes			Male			Female		
	65-plus	65-69	70-plus	65-plus	65-69	70-plus	65-plus	65-69	70-plus
All races	\$8,469	\$9,619	\$8,044	\$11,854	\$13,809	\$10,866	\$6,734	\$6,793	\$6,712
White	3,975	10,153	8,441	12,398	14,504	11,336	7,055	7,171	7,027
Black	5,081	5,821	4,861	7,167	8,328	6,658	4,494	4,640	4,436
Hispanic ¹	5,282	6,111	4,924	6,803	8,704	6,183			

¹ Hispanic persons may be of any race.

Source: U.S. Senate Special Committee on Aging, "Aging America: Trends and Projections, Nov 1989," Serial No. 101-E, U.S. Government Printing Office, Table 2.5, p. 36 and U.S. Bureau of the Census, Mar 1988 Current Population Survey, prepared by Congressional Research Service.

Table 6

Life expectancy at birth and age 65 by race and sex: 1900-87

Year	All races			White			Black		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
At birth:									
1900 ^{1, 2}	47.3	46.3	48.3	47.6	46.6	48.7	33.0 ³	32.5 ³	33.5 ³
1950 ²	68.2	65.5	71.1	69.1	66.5	72.2	60.7	58.9	62.7
1960 ²	69.7	66.6	73.1	70.6	67.4	74.1	63.2	60.7	65.9
1970	70.9	67.1	74.8	71.7	68.0	75.6	64.1	60.1	68.3
1980	73.7	70.0	77.4	74.4	70.7	78.1	68.1	63.8	72.5
1987 ²	74.9	71.6	78.3	75.5	72.1	78.8	69.7	65.4	73.8
At age 65:									
1900-02 ^{1, 2}	11.9	11.5	12.2	—	11.5	12.2	—	10.4 ³	11.4 ³
1950 ²	13.9	12.8	15.0	—	12.8	15.1	13.9	12.9	14.9
1960 ²	14.3	12.8	15.8	14.4	12.9	15.9	13.9	12.7	15.1
1970	15.2	13.1	17.0	15.2	13.1	17.1	14.2	12.5	15.7
1980	16.4	14.1	18.3	16.5	14.2	18.4	15.1	13.0	16.8
1987 ²	16.9	14.8	18.6	17.0	14.9	18.7	15.6	13.6	17.2

¹ 10 States and the District of Columbia.² Includes deaths of nonresidents of the United States.³ Figure is for the nonwhite population.

Source: U.S. Senate Special Committee on Aging. "Aging America: Trends and Projections, Nov 1989," Serial No. 101-E, Table 1-6, p. 14.

Table 7

Death Rates for older persons, by age, sex, and race: selected years, 1950-85

Age, sex, and race	1950 ¹	1960 ¹	1970	1980	1985 ²
All races, both sexes:					
65-74	40.7	38.2	35.8	29.9	28.4
75-84	93.3	87.5	80.0	66.9	64.1
85+	202.0	198.6	175.4	159.8	154.9
All races, male:					
65-74	49.3	49.1	48.7	41.1	37.9
75-84	104.3	101.8	100.1	88.2	85.1
85+	216.4	211.9	197.7	188.0	182.1
All races, female:					
65-74	33.3	28.7	25.8	21.4	21.0
75-84	84.0	76.3	66.8	54.4	51.6
85+	191.9	190.1	163.5	147.5	143.9
White, male:					
65-74	48.6	48.5	48.1	40.4	37.2
75-84	105.3	103.0	101.0	88.3	85.2
85+	221.2	217.5	203.9	191.0	186.4
White, female:					
65-74	32.4	27.8	24.7	20.7	20.3
75-84	84.8	77.0	67.0	54.0	51.3
85+	196.8	194.8	167.3	149.8	146.8
Black, male:					
65-74	53.1	58.0	58.0	51.3	48.5
75-84	101.0 ³	86.1	94.5	92.3	92.9
85+		148.4	144.2	161.0	153.5
Black, female:					
65-74	40.0	40.6	38.6	30.6	29.1
75-84	83.5 ³	67.3	66.9	62.1	60.6
85+		130.5	121.3	123.7	116.8

¹ Includes deaths of nonresidents.² Based on 10-percent sample of deaths.³ Figure is for persons 75 years or older.

Note: Rates are death per 1,000 resident population in specified group.

Source: U.S. Senate Special Committee on Aging. "Aging America: Trends and Projections, 1979-88." Excepted from Table 4-5, p. 108.

Table 8

Age-specific mortality rates, American Indians and Alaska natives in reservation states, 1984-1986, and selected U.S. populations, 1985

Age	Death per 100,000 Population					Ratio Indian to U.S. all races
	Indian & Alaska Native		U.S. Rate			
	Number	Rate	All races	White	All other	
Under 1	1,177	1,131.0	1,067.8	916.3	1,720.8	1.1
1-4	335	91.8	51.4	46.2	73.8	1.8
5-14	296	31.3	26.3	24.8	32.8	1.2
15-24	1,581	161.4	95.9	92.9	110.3	1.7
25-34	1,682	240.1	123.4	108.4	204.5	1.9
35-44	1,709	370.9	207.2	181.0	372.4	1.8
45-54	2,107	636.9	516.3	471.5	805.2	1.2
55-64	2,941	1,232.5	1,282.7	1,218.7	1,781.2	1.0
65-74	3,439	2,332.0	2,838.6	2,772.8	3,412.8	0.8
75-84	3,328	5,258.6	6,445.1	6,406.8	6,827.6	0.8
85 +	1,952	10,885.0	15,480.3	15,757.0	12,516.1	0.7

Source: Department of Health and Human Services, Indian Health Service, "Trends in Indian Health, 1989," Table 4.10, p. 39.

Table 9

Death rates* for the ten leading causes of death among older people, by ten-year intervals, race, and sex: United States, 1986

	Total	65-74 years	75-84 years	85 years & over
All causes				
White	896.2	2741.2	6312.6	15,639.1
Male	954.4	3634.8	8341.7	18,576.1
Female	840.7	2031.8	5108.7	14,502.9
Black	854.2	3697.9	7338.4	13,515.2
Male	987.7	4789.9	9290.8	15,488.1
Female	733.9	2892.3	6148.8	12,510.3
Diseases of the heart				
White	333.5	1024.5	2636.4	7332.9
Male	348.6	1440.9	3405.2	8138.4
Female	319.0	693.9	2180.2	7021.3
Black	265.2	1348.1	2920.2	5906.6
Male	281.3	1673.1	3407.3	6268.7
Female	250.8	1108.3	2623.5	5698.6
Malignant neoplasms				
White	201.8	837.7	1280.5	1612.4
Male	218.8	1063.3	1827.0	2462.3
Female	156.6	658.7	956.4	1283.6
Black	177.4	1030.7	1484.1	1694.3
Male	211.4	1455.1	2249.2	2620.9
Female	146.7	717.5	1017.9	1254.5
Cerebrovascular diseases				
White	63.6	151.8	563.0	1798.1
Male	50.5	171.4	617.3	1697.0
Female	76.2	136.3	530.7	1837.3
Black	61.3	297.9	748.3	1462.6
Male	57.1	337.8	809.9	1350.7
Female	65.0	268.5	710.7	1504.1
Chronic Obstructive Pulmonary Disease (COPD)				
White	34.8	155.3	308.4	379.1
Male	43.4	216.6	522.9	783.4
Female	26.6	106.7	181.3	222.7
Black	16.6	105.8	164.0	189.6
Male	23.8	178.0	317.2	398.5
Female	10.1	52.6	70.7	91.7
Pneumonia and Influenza				
White	30.5	56.6	243.8	1064.5
Male	29.9	78.4	343.0	1402.7
Female	31.0	39.4	185.0	933.7
Black	22.9	83.5	244.1	679.1
Male	27.6	125.3	351.1	967.2
Female	18.6	52.7	178.8	541.4
Diabetes				
White	14.8	53.5	114.3	206.2
Male	12.8	55.8	116.9	207.6
Female	16.7	51.6	112.7	205.6

Table 9

Death rates* for the ten leading causes of death among older people, by ten-year intervals, race, and sex: United States, 1986—Continued

	Total	65-74 years	75-84 years	85 years & over
Black	21.5	120.5	214.0	312.3
Male	16.5	100.8	178.2	223.9
Female	26.0	135.0	235.8	351.0
Injuries				
White	39.3	47.5	104.8	254.6
Male	55.0	63.8	140.9	358.1
Female	24.4	34.5	83.4	214.6
Black	42.9	67.3	127.2	226.1
Male	65.0	100.0	196.9	320.9
Female	23.0	43.2	84.7	180.7
Atherosclerosis				
White	10.2	15.4	74.9	448.6
Male	7.8	20.4	87.5	432.2
Female	12.5	11.4	67.5	454.9
Black	5.9	23.1	81.6	288.2
Male	5.4	28.1	95.0	300.0
Female	6.3	19.5	73.5	280.7
Nephritis, Nephrotic syndrome and Nephrosis				
White	8.5	23.3	73.3	207.2
Male	8.8	29.6	100.2	309.6
Female	8.3	18.4	57.3	167.6
Black	13.7	64.8	158.1	330.8
Male	14.1	75.2	196.2	410.4
Female	13.3	57.1	134.9	291.7
Septicemia				
White	7.4	20.3	59.8	173.2
Male	7.0	25.0	74.2	201.7
Female	7.8	16.6	51.2	162.1
Black	11.7	47.6	127.2	291.0
Male	12.2	61.0	150.4	316.4
Female	11.2	37.6	113.0	277.2

* Rates per 100,000 in specified groups.

Source: Abstracted from National Center for Health Statistics. Vital Statistics of the United States: 1986, Vol. II, Mortality, Part A, Table 1-9.

Table 10

Death rates* for the ten leading causes of death: American Indians and Alaska natives age 65 and over in Reservation States 1984-1986, and U.S., all races, 1985

Cause of death	Indian & Alaskan Native		U.S. all races	Ratio Indian to U.S. all races
	Number	Rate	Rate	
Total	8,719	3,812.6	5,152.4	0.7
Diseases of the heart	3,108	1,359.1	2,172.6	0.6
Malignant neoplasms	1,519	664.2	1,046.5	0.6
Cerebrovascular diseases	676	295.6	463.7	0.6
Pneumonia and influenza	470	205.5	206.1	1.0
Diabetes mellitus	388	169.7	95.6	1.8
Accidents	295	129.0	87.5	1.5
Motor vehicle	83	36.3	21.6	1.7
Other accidents	212	92.7	65.9	1.4
Chronic obstructive pulmonary diseases and allied cond.	289	126.4	212.4	0.6
Nephritis, nephrotic syndrome and nephrosis	164	71.7	60.9	1.2
Chronic liver disease and cirrhosis	123	53.8	34.3	1.6
Atherosclerosis	110	48.1	79.8	0.6
All other causes	1,577	—	—	—

Note: Connecticut, Rhode Island, and Texas included as Reservation States beginning in 1983, and Alabama in 1984.

* Rates per 100,000 population.

Source: Department of Health and Human Services. Indian Health Service, "Trends in Indian Health 1989," Table 4.5, p. 34.

Table 11

Number of selected reported chronic conditions per 1,000 persons age 65 and over, by race and age: United States, 1988

Type of Chronic Condition	White			Black		
	Total	65-74 years	75 years and over	Total	65-74 years	75 years and over
Arthritis	489.0	452.0	547.0	487.7	429.0	586.2
High blood pressure (Hypertension)	358.8	357.6	360.5	530.6	524.8	538.9
Heart disease	302.9	278.6	341.0	224.1	202.0	261.6
Ischemic heart disease	146.1	136.1	161.7	* 44.1	* 26.4	* 74.4
Diabetes	83.9	86.3	80.1	187.4	185.5	190.5
Chronic bronchitis	66.6	68.1	64.3	* 48.7	* 46.9	* 51.9
Hardening of the arteries	61.9	50.5	79.6	60.0	* 51.5	* 74.4
Cerebrovascular disease	48.2	36.7	66.3	67.5	* 64.0	* 73.3
Emphysema	39.2	37.7	41.7	* 22.5	* 19.8	* 25.9
Kidney trouble	25.6	21.7	32.0	* 23.3	* 15.2	* 37.2

* Numerator has a relative standard error of more than 30 percent.

Source: Excerpted from National Center for Health Statistics. Current Estimates from the National Health Interview Survey: United States, 1988 Vital and Health Statistics, Series 10, No. 173. Department of Health and Human Services Pub. No. (PHS) 89-1501. Washington, DC, U.S. Government Printing Office, Table 59, p. 89.

Table 12

Number of selected reported impairments per 1,000 persons, by race and age: United States, 1988

Type of impairment	White			Black		
	65 years and over			65 years and over		
	Total	65-74 years	75 years and over	Total	65-74 years	75 years and over
Number of impairments per 1,000 persons						
Visual impairment	90.4	67.1	126.9	101.6	*83.8	*131.9
Color blindness	13.9	17.3	*8.5	*5.4	*3.3	*9.0
Cataracts	170.0	120.0	248.1	147.4	100.3	228.9
Glaucoma	37.1	27.8	51.7	90.0	*77.2	*112.7
Hearing impairment	327.9	286.5	392.6	201.2	152.5	284.1
Tinnitus	88.2	93.4	79.9	*54.6	*66.0	*33.8
Speech impairment	13.2	13.9	*12.2	*16.2	*16.5	*14.7
Absence of extremities (excludes tips of fingers or toes only)	19.1	21.6	15.3	*33.3	*36.3	*28.2
Paralysis of extremities, complete or partial	17.4	21.0	*11.8	*19.6	*23.1	*12.4
Deformity or orthopedic impairment	166.1	155.9	182.1	121.2	107.6	*145.4
Back	83.7	77.9	92.9	*56.2	*58.1	*53.0
Upper extremities	26.1	26.4	25.7	*20.4	*5.3	*46.2
Lower extremities	73.7	70.8	78.2	62.5	*66.7	*55.2

* Numerator has a relative standard error of more than 30 percent.

Source: Excerpted from National Center for Health Statistics. Current Estimates from the National Health Interview Survey: United States, 1988. Vital and Health Statistics, Series 10, No. 173, Department of Health and Human Services Pub. No. (PHS) 89-1501. Washington, DC, U.S. Government Printing Office, Table 59, p. 88.

Table 13

Number of selected reported impairments per 1,000 persons, by family income and age: United States, 1988

Type of impairment	Family income											
	Less than \$10,000			\$10,000–\$19,999			\$20,000–\$34,999			\$35,000 or more		
	65 years and over			65 years and over			65 years and over			65 years and over		
	Total	65–74 years	75 years and over	Total	65–74 years	75 years and over	Total	65–74 years	75 years and over	Total	65–74 years	75 years and over
Visual impairment	111.1	82.2	138.7	102.7	87.7	129.0	68.4	45.5	119.3	70.2	75.8	*54.6
Color blindness	*8.0	*8.0	*7.9	18.0	*21.3	*12.2	*7.1	*7.0	*6.8	*21.9	*30.3	*—
Cataracts	182.6	137.1	226.0	174.0	139.4	234.4	130.8	78.4	247.4	149.6	122.9	218.6
Glaucoma	40.1	*28.3	51.4	37.8	29.6	51.6	42.7	*27.9	*75.8	57.2	*53.1	*68.0
Hearing impairment	307.8	243.5	369.5	364.0	335.7	413.6	259.0	239.4	302.7	314.4	331.6	270.1
Tinnitus	89.5	101.5	78.1	100.8	95.1	110.8	84.3	100.7	*47.9	74.2	87.8	*39.2
Speech impairment	*17.2	*23.0	*12.1	*8.9	*7.2	*11.8	*6.4	*6.1	*7.5	*15.8	*21.9	*—
Absence of extremities (excludes tips of fingers or toes only)	*20.5	*24.6	*16.5	31.4	43.1	*10.8	*20.4	*15.3	*31.7	*2.9	*4.0	—
Paralysis of extremities, complete or partial	*14.1	*20.0	*8.3	*14.2	*20.0	*3.9	*25.2	*30.4	*13.7	*—	*—	*—
Deformity or orthopedic impairment	182.2	178.6	185.7	178.6	163.7	204.7	136.1	127.2	156.0	140.1	163.6	*79.4
Back	93.6	92.1	94.9	97.6	90.6	110.4	56.2	58.9	*50.3	52.4	55.9	*42.3
Upper extremities	23.7	*17.6	*29.5	32.2	33.5	*29.7	28.1	*25.1	*35.4	*18.1	*20.8	*11.3
Lower extremities	84.1	85.5	82.9	79.0	75.6	84.9	60.5	56.1	*70.2	79.4	93.0	*43.3

* Numerator has a relative standard error of more than 30 percent.

Source: National Center for Health Statistics. C.A. Schoenborn and M. Marano. 1988. Current Estimates from the National Health Interview Survey: United States, 1987. Vital and Health Statistics. Series 10, No. 166. Department of Health and Human Services Pub. No. (PHS) 88-1594. Washington, DC, U.S. Government Printing Office, Table 60, pp. 90, 92.

Table 14

Percent distribution of persons by degree of activity limitation due to conditions by sociodemographic characteristics: United States, 1988

Characteristic	All persons	With no activity limitation	With activity limitation	With limitation			
				Limited in major activity	Limited, but not in major activity		
					With limitation in major activity	Unable to carry on major activity	Limited in amount or kind of major activity
All persons ¹	100.0	86.3	13.7	4.3	9.4	4.0	5.4
Age							
45-64 years	100.0	77.6	22.4	5.5	16.9	8.6	8.4
65 years and over	100.0	63.0	37.0	14.4	22.6	10.5	12.1
65-69 years	100.0	64.3	35.7	7.6	28.1	16.2	11.9
70 years and over	100.0	62.4	37.6	17.9	19.8	7.6	12.2
Sex and age							
Male							
All ages	100.0	86.8	13.2	3.8	9.5	4.3	5.1
45-64 years	100.0	78.2	21.8	4.2	17.6	10.0	7.6
65-69 years	100.0	63.4	36.6	5.4	31.2	20.6	10.6
70 years and over	100.0	63.9	36.1	21.0	15.1	6.5	8.7
Female							
All ages	100.0	85.8	14.2	4.8	9.4	3.7	5.7
45-64 years	100.0	77.0	23.0	6.8	16.3	7.2	9.1
65-69 years	100.0	65.1	34.9	9.4	25.5	12.5	13.0
70 years and over	100.0	61.4	38.6	15.8	22.8	8.3	14.5
Race and age							
White							
All ages	100.0	86.2	13.8	4.5	9.3	3.8	5.5
45-64 years	100.0	78.4	21.6	5.4	16.1	7.9	8.2
65-69 years	100.0	65.5	34.5	7.7	26.9	14.9	11.9
70 years and over	100.0	63.2	36.8	17.9	18.9	7.0	11.8
Black							
All ages	100.0	85.3	14.7	3.4	11.2	5.8	5.4
45-64 years	100.0	69.3	30.7	6.4	24.4	14.4	9.9
65-69 years	100.0	52.5	47.4	7.1	40.3	27.8	12.5
70 years and over	100.0	51.5	48.5	18.0	30.5	13.8	16.7
Family income and age							
Under \$10,000							
All ages	100.0	74.0	26.0	7.1	18.9	9.1	9.8
45-64 years	100.0	43.9	56.1	8.7	47.4	30.5	16.9
65-69 years	100.0	43.8	56.2	10.3	45.9	29.3	16.6
70 years and over	100.0	54.1	45.9	20.9	24.9	7.5	17.5
\$10,000-\$19,999							
All ages	100.0	81.9	18.1	5.4	12.7	5.9	6.8
45-64 years	100.0	67.2	32.8	6.9	25.8	14.1	11.7
65-69 years	100.0	62.5	37.5	7.7	29.8	17.6	12.2
70 years and over	100.0	63.7	36.3	18.9	17.4	7.0	10.3
\$20,000-\$34,999							
All ages	100.0	88.5	11.5	3.8	7.8	2.9	4.8
45-64 years	100.0	79.5	20.5	5.5	15.0	6.8	8.3
65-69 years	100.0	71.2	28.8	6.2	22.6	11.6	11.0

Table 14

Percent distribution of persons by degree of activity limitation due to conditions by sociodemographic characteristics: United States, 1988—Continued

Characteristic	All persons	With no activity limitation	With activity limitation	With limitation			
				Limited in major activity			
				Limited, but not in major activity	With limitation in major activity	Unable to carry on major activity	Limited in amount or kind of major activity
70 years and over	100.0	66.2	33.8	16.9	16.9	6.8	10.1
\$35,000 or more							
All ages	100.0	92.1	7.9	2.8	5.0	1.5	3.5
45-64 years	100.0	87.2	12.8	4.4	8.4	2.7	5.7
65-69 years	100.0	74.4	25.6	6.3	19.3	10.4	8.9
70 years and over	100.0	70.3	29.7	13.5	16.2	7.6	8.5

¹ Includes other races and unknown family income.

Note: Data are based on household interviews of the civilian noninstitutionalized population.

Source: Excerpted from National Center for Health Statistics. Current Estimates from the National Health Interview Survey, United States: 1988. Vital and Health Statistics, Series 10, No. 173. Department of Health and Human Services Pub. No. (PHS) 89-1501. Washington, DC, U.S. Government Printing Office, Table 67, pp. 108-109.

Table 15

Number of persons and percent distribution by respondent-assessed health status, by sociodemographic characteristics: United States, 1988

Characteristic	All persons ¹ (number in thousands)	All health statuses ²	Respondent-assessed health status					
			Excel- lent	Very good	Good	Fair	Poor	
Percent distribution								
All persons ³	240,890	100.0	39.1	27.8	23.2	7.2	2.7	
Age								
45–64 years	45,573	100.0	28.2	26.5	28.2	11.6	5.4	
65 years and over	28,683	100.0	16.3	21.5	32.8	19.9	9.5	
Sex and Age								
Male								
All ages	116,657	100.0	42.0	27.6	21.5	6.3	2.6	
45–64 years	21,782	100.0	30.7	27.1	25.7	10.6	5.9	
65 years and over	11,895	100.0	17.9	21.0	32.0	19.4	9.6	
Female								
All ages	124,232	100.0	36.3	28.0	24.7	8.1	2.8	
45–64 years	23,791	100.0	25.9	26.0	30.5	12.6	5.0	
65 years and over	16,788	100.0	15.2	21.8	33.3	20.3	9.4	
Race and Age								
White								
All ages	203,256	100.0	40.2	28.4	22.1	6.7	2.6	
45–64 years	39,627	100.0	29.6	27.4	27.7	10.4	4.9	
65 years and over	25,817	100.0	17.0	22.0	33.3	19.1	8.6	
Black								
All ages	29,382	100.0	31.2	23.8	30.2	10.9	4.0	
45–64 years	4,635	100.0	16.6	19.6	32.9	21.4	9.6	
65 years and over	2,401	100.0	9.0	16.4	26.4	29.3	18.9	
Family Income and Age								
Under \$10,000								
All ages	28,400	100.0	25.8	23.1	28.9	14.6	7.5	
45–64 years	3,523	100.0	10.3	14.2	25.1	27.8	22.7	
65 years and over	6,157	100.0	11.7	17.2	31.1	25.0	15.0	
\$10,000–\$19,999								
All ages	42,163	100.0	31.3	27.0	27.5	10.4	3.9	
45–64 years	6,919	100.0	19.5	21.2	32.0	18.4	8.8	
65 years and over	7,682	100.0	15.5	21.7	32.5	21.3	9.0	
\$20,000–\$34,999								
All ages	59,615	100.0	39.9	30.2	22.6	5.7	1.7	
45–64 years	10,777	100.0	26.7	27.4	31.4	10.8	3.8	
65 years and over	5,193	100.0	18.2	23.5	34.9	17.0	6.4	
\$35,000 or More								
All ages	74,869	100.0	49.7	28.4	17.9	3.2	0.8	
45–64 years	16,668	100.0	38.1	30.2	24.8	5.5	1.4	
65 years and over	3,476	100.0	25.1	25.8	30.9	11.9	6.3	

¹ Includes unknown health status.

² Excludes unknown health status.

³ Includes other races and unknown family income.

Note: Data are based on household interviews of the civilian noninstitutionalized population.

Source: Excerpted from National Center for Health Statistics. Current Estimates from the National Health Interview Survey: United States, 1988. Vital and Health Statistics, Series 10, No. 173. Department of Health and Human Services Pub. No. (PHS) 89-1501. Washington, DC, U.S. Government Printing Office, Table 70, pp. 114-115.

Table 16

Personal health characteristics for persons 18 and over: 1985

	Sleeps 6 hours or less	Never eats break- fast	Smokes every day	Less physically active than contempo- raries	Had 5 or more drinks on any one day ¹	Cur- rent smok- er	30 percent or more above desir- able weight ²
All persons ³	22.0	24.3	39.0	16.4	37.5	30.1	13.0
Age:							
18 to 29 years old	19.8	30.4	42.2	17.1	54.4	31.9	7.5
30 to 44 years old	24.3	30.1	41.4	18.3	39.0	34.5	13.6
45 to 64 years old	22.7	21.4	37.9	15.3	24.6	31.6	18.1
65 years old and over	20.4	7.5	30.7	13.5	12.2	16.0	13.2
65 to 74 years old	19.7	9.0	32.4	15.8	NA	19.7	14.9
75 years old and over	21.5	5.1	27.8	9.8	NA	10.0	10.3

¹ Percent of drinkers who had 5 or more drinks on any one day in the past year.² Based on 1960 Metropolitan Life Insurance Standards. Data are self-reported.³ Excludes persons whose health practices are unknown.

Note: In percent.

Source: U.S. Senate Special Committee on Aging. "Aging America: Trends and Projections, Nov 1989," Serial No. 101-E, U.S. Government Printing Office, Table 4-2, p. 80.

Table 17

Major contributing food groups* to the diet of older Americans

55-64 years		65-74 years	
White	Black	White	Black
SFB **	SFB **	SFB **	SFB **
Dairy	Sugar products	Dairy	Dairy
Fruits	Fruits	Fruits	Fruits
Vegetables	Dairy	Vegetables	Sugar products
Sugar products	Grains	Grains	Grains
Grains	Vegetables	Sugar products	Vegetables
Meats	Meats	Meats	Meats

* Based on grams of food consumed.

** Sugar free beverages.

Source: Data from National Center for Health Statistics; NHANES I, 1971-1974; NHANES II, 1976-1980 published in THE BLACK AMERICAN ELDERLY: Research on Physical and Psychosocial Health, J.A. Jackson, Editor, 1988; Springer Publishing Company, Inc., New York 10012, used with permission.

Table 18

Median intakes of dietary components that approached but did not meet dietary recommendations in NHANES I or NHANES II

Component	Group
Kilocalories	All those aged 55-74
Carbohydrates	Males aged 55-74
Protein	Most black females
Calcium	All those aged 55-74
Phosphorous	Most black females
Iron	All females and black males aged 65-74
Potassium	All black females and black males aged 65-74
Vitamin A	Majority of those aged 55-74
B-complex vitamins	Majority of those aged 55-74

Source: Data from National Center for Health Statistics; NHANES I, 1971-1974; NHANES II, 1976-1980 published in THE BLACK AMERICAN ELDERLY: Research on Physical and Psychosocial Health, J.A. Jackson, Editor; 1988; Springer Publishing Company, Inc., New York 10012, used with permission.

Table 19

Intake of fat components and cholesterol for persons 55-74 years, by race, sex, and age: United States, 1971-74 and 1976-80

Race, sex, and age	Total fat		Saturated fat		Linoleic acid		Cholesterol	
	1971-74	1976-80	1971-74	1976-80	1971-74	1976-80	1971-74	1976-80
White male								
Mean intake in grams								
Mean intake in milligrams								
55-64 years	88	87	33	32	9	12	456	429
65-74 years	74	76	27	27	7	10	405	383
White female								
55-64 years	56	57	20	20	6	8	308	262
65-74 years	52	51	18	17	5	8	271	240
Black male								
55-64 years	77	77	25	28	8	9	507	401
65-74 years	65	68	23	24	7	9	466	420
Black female								
55-64 years	49	54	17	19	6	8	268	302
65-74 years	51	45	18	15	5	7	323	235

Note: Mean intake is based on one 24-hour recall of dietary intake.

Data are from the first and second National Health and Nutrition Examination Surveys.

Source: National Center for Health Statistics, "Health Statistics on Older Persons, United States, 1986," Vital and Health Statistics Series 3 No. 25, Department of Health and Human Services Pub. No. (PHS) 87-1409, Washington, DC, U.S. Government Printing Office, June 1987, Table 30, p. 40.

Table 20

Health care coverage for persons 65 years of age and over, by type of coverage and selected characteristics: United States, 1986

Characteristic	Medicare and private insurance	Medicare and Medicaid ¹	Medicare ²
	1986	1986	1986
Percent of population			
Total ^{3,4}	71.6	5.8	17.9
Age			
65-74 years	73.5	4.9	15.7
75 years and over	68.2	7.3	21.7
75-84 years	70.4	7.0	19.8
85 years and over	58.7	8.8	29.6
Sex ³			
Male	72.8	3.7	18.4
Female	70.8	7.3	17.5
Race ³			
White	75.4	4.5	16.1
Black	34.2	19.7	34.9
Family income ^{3,5}			
Less than \$10,000	54.7	14.4	27.1
\$10,000-\$14,999	78.0	* 3.9	15.5
\$15,000-\$19,999	82.8	* 2.0	11.5
\$20,000-\$34,999	82.0	* 2.2	10.0
\$35,000 or more	77.5	* 1.4	13.9
Geographic region ³			
Northeast	74.1	4.1	17.0
Midwest	77.7	3.8	14.5
South	65.3	8.0	21.0
West	70.6	6.6	18.2
Location of residence ³			
Within MSA	71.7	5.2	17.8
Outside MSA	71.2	7.2	18.1

¹ Includes persons receiving Aid to Families with Dependent Children or Supplemental Security Income or those with current Medicaid cards.

² Includes persons not covered by private insurance or Medicaid.

³ Age adjusted.

⁴ Includes all other races not shown separately and unknown family income.

⁵ Family income categories for 1982 and 1986. Income categories in 1980 are less than \$7,000; \$7,000-\$9,999; \$10,000-\$14,999; \$15,000-\$24,999; \$25,000 or more.

* Relative standard error greater than 30 percent.

Notes: Persons with Medicare, private insurance, and Medicaid appear in both columns. Denominators include persons with unknown health insurance (0.8 percent in 1986). In 1986, 5.0 percent of all persons 65 years of age and over had no Medicare but only 0.6 percent were without health insurance.

Data are based on household interviews of a sample of the civilian noninstitutionalized population.

Source: Excerpted from National Center for Health Statistics. Health United States, 1988. Department of Health and Human Services Pub. No. (PHS) 89-1232. Washington, DC, U.S. Government Printing Office, Mar 1989, Table 118, p. 172.

Table 21

Number per person per year and number of physician contacts, by place of contact, and sociodemographic characteristics: United States, 1988

Characteristic	Place of contact				
	All places ¹	Tele-phone	Office	Hospital	Other
Number per person per year ²					
All persons ³	5.4	0.7	3.2	0.7	0.8
Age					
45-64 years	6.1	0.8	3.6	0.9	0.8
65-74 years	8.4	0.9	5.1	1.2	1.2
75 years and over	9.2	0.8	5.7	0.9	1.7
Sex and Age					
Male					
All ages	4.5	0.5	2.6	0.7	0.7
45-64 years	5.2	0.6	3.1	0.8	0.7
65 years and over	8.5	0.8	4.9	1.3	1.4
Female					
All ages	6.2	0.8	3.8	0.7	0.9
45-64 years	6.9	0.9	4.1	0.9	0.9
65 years and over	8.8	0.9	5.6	0.9	1.3
Race and Age					
White					
All ages	5.6	0.8	3.4	0.7	0.8
45-64 years	6.1	0.8	3.7	0.8	0.8
65 years and over	8.7	0.9	5.4	1.0	1.3
Black					
All ages	4.6	0.4	2.3	1.0	0.9
45-64 years	6.6	*0.4	3.2	1.5	1.4
65 years and over	9.0	*0.4	5.2	1.3	2.0
Family Income and Age					
Under \$10,000					
All ages	6.6	0.7	3.4	1.1	1.3
45-64 years	10.1	1.3	4.9	2.2	1.8
65 years and over	9.1	0.8	5.4	1.1	1.7
\$10,000-\$19,999					
All ages	5.6	0.6	3.1	0.9	1.0
45-64 years	6.8	0.7	3.8	1.1	1.1
65 years and over	8.6	0.8	5.3	1.1	1.5
\$20,000-\$34,999					
All ages	5.2	0.8	3.2	0.6	0.6
45-64 years	6.0	0.8	3.8	0.8	0.7
65 years and over	9.0	1.1	5.7	1.2	1.0
\$35,000 or More					
All ages	5.3	0.8	3.2	0.5	0.7
45-64 years	5.4	0.8	3.2	0.6	0.7
65 years and over	9.2	1.1	5.5	1.1	1.4

¹ Includes unknown place of contact.

² Does not include physician contacts while an overnight patient in a hospital.

³ Includes other races and unknown family income.

* Estimates in which the numerator has a relative standard error of more than 30 percent.

Source: Excerpted from National Center for Health Statistics. Current Estimates from the National Health Interview Survey: United States, 1988. Vital and Health Statistics, Series 10, No. 173. Department of Health and Human Services Pub. No. (PHS) 89-1501, Washington, DC, U.S. Government Printing Office, Table 71, pp. 116-117.

Table 22

Number and rate of older (65 and over) patients discharged from short-stay hospitals and of days of care, with average length of stay (ALOS*), by sex, race, and age

	Discharges		Days of care		ALOS
	Number in thousands	Rate per 1,000	Number in thousands	Rate per 1,000	
National hospital discharge survey, 1986					
Sex and race					
Both sexes					
All races	10,716	367.3	91,041	3,120.7	8.5
White	8,740	332.4	73,953	2,812.2	8.5
All other	937	325.9	9,148	3,182.0	9.8
Unknown	1,039	—	7,940	—	7.6
Male					
All races	4,677	395.6	38,386	3,246.8	8.2
White	3,794	356.3	31,005	2,911.9	8.2
All other	420	357.3	3,944	3,359.5	9.4
Unknown	463	—	3,437	—	7.4
Female					
All races	6,039	348.1	52,655	3,034.8	8.7
White	4,946	316.1	42,947	2,744.4	8.7
All other	517	304.2	5,204	3,059.6	10.1
Unknown	575	—	4,503	—	7.8
HCFA Medicare Data, 1984					
Race ¹					
White	8,647	361	73,713	3,078	8.5
All other	795	335	7,763	3,270	9.8

* ALOS in the Medicare data is the average number of covered days of care per hospital discharge.

¹ Excludes unknown race.

Source: National Hospital Discharge Survey data from National Center for Health Statistics, Utilization of Short-stay Hospitals, United States, 1986, Annual Summary. National Center for Health Statistics Series 13, No. 96, Department of Health and Human Services Pub. No. (PHS) 88-1757, Table 2, p. 22. Health Care Financing Administration Medicare data from Health Care Financing Program Statistics, Medicare and Medicaid Data Book, 1988," Health Care Financing Administration Pub. No. 03270, Table 3.10, p. 43.

Table 23

Medicare persons served and Medicare admissions for skilled nursing facilities, by race

	Aged persons served, 1984				
	Persons served		Reimbursement		
	Number in thousands	Per 1,000 enrollees	Amount in millions	Per person served	Per enrollee
Race ¹					
White	264.8	11.1	\$414.7	\$1,566	\$17.32
All other	17.5	7.4	31.4	1,796	13.23
	Covered admissions, 1984*				
	Admissions		Days of care		Reimbursements
	Number	Per 1,000 enrollees	Per 1,000 enrollees	Per admission	Per admission Per day
Race:					
White	303,062	12	305	26.4	\$1,385 \$52
Other	21,478	7	223	29.9	1,560 52
Unknown	8,206	10	259	26.8	1,417 53

¹ Excludes unknown race.

* Includes admissions of disabled and aged beneficiaries. Admissions of persons under 65 years of age were only 3 percent of all admissions. Excludes stays of beneficiaries who have exhausted their SNF benefits and for whom no discharge record was received.

Source: 1984 data from Health Care Financing Administration. "Health Care Financing Program Statistics: Medicare and Medicaid Data Book 1988," Health Care Financing Administration Pub. No. 03270, Table 3.13, p. 45 and Research Brief No. 86-4, "Medicare: Use of Skilled Nursing Facilities, 1984," Health Care Financing Administration, Office of Research and Demonstrations.

Table 24

Number, percent distribution, and rate of nursing home residents 65 years of age and over, by age, sex, and race: United States: 1985

Age, sex, and race	Number of residents	Percent distribution	Number of residents per 1,000 population 65 years and over ¹
Total	1,315,800	100.0	46.1
Age			
65-74 years	212,100	16.1	12.5
75-85 years	509,000	38.7	57.7
85 years and over	594,700	45.2	219.4
Sex			
Male	334,000	25.4	29.0
Female	981,900	74.6	57.7
Race			
White	1,224,900	93.1	47.6
Black	82,000	6.2	35.0
Other	8,900	0.7	20.1

¹ Population data used to compute rates are from—U.S. Bureau of the Census.

Estimates of the population of the United States by age, sex, and race, 1980 to 1985. *Current Population Reports*, Series P-25, No. 985, Washington, U.S.

Government Printing Office, Apr. 1986.

Source: National Center for Health Statistics, Esther Hing, "Use of Nursing Homes by the Elderly: Preliminary Data from the 1985 National Nursing Home Survey,"

Advance Data 135, May 14, 1987, Table 1, p. 2.

Table 25

Percent of nursing home residents 65 years of age and over, by type of dependency in activities of daily living, percent distribution by number of dependencies and average number of dependencies, by age, sex, and race: United States, 1985

Dependency status	Age				Sex		Race		
	Total	65-74 years	75-84 years	85 years and over	Male	Fe-male	White	Black	Other
Percent									
Type of dependency									
Requires assistance in bathing	91.2	84.8	90.3	94.1	86.9	92.6	90.9	94.2	91.5
Requires assistance in dressing	77.7	70.2	75.9	81.9	71.5	79.7	77.3	83.7	72.9
Requires assistance in using toilet room	63.3	56.6	60.3	68.2	56.2	65.7	62.9	68.6	61.4
Requires assistance in transferring ¹	62.7	52.1	59.7	69.0	55.3	65.2	62.2	70.2	60.9
Continence—difficulty with bowel and/or bladder control	54.5	42.9	55.0	58.1	51.9	55.3	54.1	59.9	47.6
Requires assistance in eating	40.4	33.4	39.1	44.0	34.8	42.3	40.0	47.9	32.1
Number of dependencies	Percent distribution								
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
None	7.6	13.2	8.6	4.8	11.8	6.2	7.8	4.8	*8.5
1	11.0	14.0	11.6	9.4	12.5	10.5	11.3	6.5	*15.8
2	9.9	11.2	9.6	9.6	10.0	9.8	10.0	8.0	*8.8
3	7.8	7.3	8.7	7.2	8.6	7.5	7.6	11.4	*5.5
4	13.5	13.8	12.8	13.9	12.6	13.8	13.4	14.4	*16.6
5	19.8	16.6	19.4	21.3	18.7	20.2	19.9	18.9	*18.6
6	30.4	23.9	29.2	33.8	25.7	32.0	30.1	35.9	*26.3
Average number									
Average number of dependencies	3.9	3.4	3.8	4.2	3.6	4.0	3.9	4.2	3.7

¹ Transferring refers to getting in or out of a bed or chair.

Source: National Center for Health Statistics, Esther Hing, "Use of Nursing Homes by the Elderly: Preliminary Data from the 1985 National Nursing Home Survey," Advance Data 135, May 14, 1987, Table 2, p. 5.

Table 26

Number and percent of Medicare beneficiaries and length of hospice enrollment, by selected characteristics: fiscal years 1984-1985

Characteristic	Fiscal year 1984			Fiscal year 1985		
	Number ¹	Percent	Average length of stay in days	Number	Percent	Average length of stay in days
Total	2,005	100.0	29.3	5,991	100.0	32.1
Age						
Under 65 years	125	6.2	32.0	334	5.6	33.5
65-74 years	1,002	50.0	29.4	2,899	48.4	31.5
75 years or over	877	43.8	28.5	2,758	46.0	32.5
Sex						
Male	1,028	51.3	27.8	3,171	52.9	30.1
Female	977	48.7	30.6	2,820	47.1	34.3
Race						
White	1,773	88.6	29.7	5,423	90.5	32.1
Black	162	8.1	24.6	385	6.4	33.6
Other	19	0.9	21.8	47	0.8	24.1
Unknown	51	2.5	—	136	2.3	—
Diagnosis						
Cancer	1,980	98.8	29.3	5,612	93.7	32.1
Noncancer	25	1.2	25.7	375	6.3	30.8
Died in hospice	1,913	95.4	29.2	5,664	94.5	31.6
Left hospice, died	92	4.6	31.4	327	5.5	39.3

¹ The data are obtained from the social security master enrollment file.

Source: Health Care Financing Administration, F.A. Davis, "Medicare Hospice Benefit: Early Program Experiences." Health Care Financing Review, Vol. 9, No. 4, Summary 1988, Table 2, p. 103.

Table 27

Persons served and reimbursements for aged Medicare enrollees, by type of coverage, type of service, and demographic characteristics: Calendar year 1984

Characteristic	Hospital insurance						Supplementary medical insurance—physicians' and other medical services		
	Inpatient hospital services ¹			Skilled nursing facility services					
	Persons served per 1,000 enrollees	Reimbursements		Persons served per 1,000 enrollees	Reimbursements		Persons served per 1,000 enrollees	Reimbursements	
		Per person served	Per enrollee		Per person served	Per enrollee		Per person served	Per enrollee
Total	228.5	\$5,502	\$1,257	10.7	\$1,580	\$17	677.3	\$729	\$494
Age									
65–69 years	170.0	5,454	927	2.8	1,798	5	607.6	650	395
70–74 years	209.7	5,611	1,177	6.2	1,586	10	659.1	733	483
75–79 years	253.5	5,577	1,414	11.5	1,620	19	711.1	781	555
80–84 years	297.5	5,435	1,617	19.8	1,557	31	751.2	791	594
85 years or over	329.4	5,369	1,769	34.3	1,510	52	792.7	753	597
Sex									
Male	238.1	5,774	1,375	8.3	1,513	13	643.7	815	524
Female	222.0	5,301	1,178	12.3	1,610	20	699.5	677	474
Race ²									
White	230.6	5,436	1,253	11.1	1,566	17	682.8	728	497
Other	212.7	6,243	1,328	7.4	1,796	13	628.0	741	465
Census region									
Northeast	223.5	6,194	1,385	9.8	1,799	18	699.1	731	511
North Central	238.5	5,509	1,314	13.0	1,508	20	667.2	673	449
South	246.9	4,781	1,180	8.1	1,429	12	667.0	699	467
West	203.0	6,258	1,271	14.5	1,637	24	698.4	870	607
Total	326.7	\$319	\$104	51.6	\$1,096	\$57			
Age									
65–69 years	293.1	322	95	24.2	1,081	26			
70–74 years	319.4	334	107	40.2	1,093	44			
75–79 years	344.3	335	115	62.0	1,096	68			
80–84 years	358.0	308	110	86.3	1,087	94			
85 years or over	380.8	263	100	105.6	1,118	118			
Sex									
Male	314.0	346	109	45.0	1,083	49			
Female	335.1	302	101	56.0	1,103	62			
Race ²									
White	326.2	306	100	50.6	1,067	54			
Other	336.7	449	151	64.9	1,309	85			
Census region									
Northeast	381.9	306	117	62.7	1,034	65			
North Central	342.8	300	103	45.6	939	43			
South	284.2	306	87	51.4	1,236	64			
West	317.5	399	127	47.6	1,170	56			

¹ Includes prospective payment system short-stay hospital inpatient passthrough expenditures reported on the Health Care Financing Administration intermediary benefit payment report.

² Excludes unknown race.

Source: Health Care Financing Administration. "Health Care Financing Program Statistics: Medicare and Medicaid Data Book, 1988," Health Care Financing Administration Pub. No. 03270, Table 3.7, pp. 39–40.

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A. Introduction

1. Overview of Findings

In this chapter the health care utilization patterns of minorities and other disadvantaged groups are compared with those of the rest of the population. Ambulatory care, inpatient care, and long-term care are discussed.

With regard to ambulatory care, between 1964 and 1987 there was a gradual increase in the annual number of physician contacts per person in the United States. In 1964, the poor tended to have fewer physician contacts per person per year than the nonpoor. By the 1970s, the poor had more physician contacts, on average, than the nonpoor, probably due to the improved access to care for the poor as a result of the implementation of Medicaid in the late 1960s. The frequency with which Blacks contacted physicians also increased during this time. However, Blacks continue to have lower average physician contacts than Whites; since 1975 the ratio of Black contacts to White contacts has remained approximately the same. Differences in utilization of health care services are strongly influenced by differences in insurance coverage for health care costs. (Further discussion on differences in health insurance coverage among subgroups of the population is found in Chapter XII, Health Insurance Coverage and Health Care Expenditures.)

For all Americans, a decline in the use of office-based physicians for ambulatory health care, which was noted in the previous

edition of this publication, became more pronounced in the 1980s. At the same time, use of physician services in hospital outpatient departments and emergency rooms grew slightly; the most substantial increase was for other care sites (e.g., freestanding clinics). Although a trend away from seeing physicians in their offices was obvious in all race and income groups, a greater proportion of Whites than Blacks continued to consult with physicians in the doctor's private office or by telephone, while significantly more Blacks had physician contacts in hospital outpatient clinics or emergency rooms, or other nonoffice-based settings.

A high proportion of physician visits continued to be made to general practitioners, but a trend noted in previous years toward a greater use of specialists continued. Whites make considerably more visits than minorities to specialists in pediatrics and internal medicine. White women make more visits to obstetricians/gynecologists than do minority women.

Utilization of inpatient hospital care, as measured by the hospital discharge rate (the number of hospital discharges per thousand persons per year), declined substantially from 1981 to 1987 for the total population and for all income, race, and age groups within it. Discharge rates in 1987 remained highest for persons 75 and older, persons in low income groups, and for the Black population. Similarly, the average length of stay also declined between 1981 and 1987 for all income, age,

and racial groups, although the decline was slightly more pronounced for Blacks. However, Blacks and low income groups continued to have a longer average length of stay than Whites and high income groups.

Of all patients discharged from hospitals, the percentage who had surgical procedures increased over the period, from 41.7 percent in 1975 to 47.4 percent in 1987.

With respect to long-term care, in the mid-1970s, nursing home utilization stabilized after a ten-year period of very fast growth. Whereas rates of nursing home residency for Whites have remained relatively unchanged since the early 1970s, rates for the Black population have shown a steady increase. Unfortunately, data for other racial or ethnic comparisons are not readily available. Further, such data that do exist are not directly comparable to the data for White and Black Americans.

2. Data Sources and Limitations

Utilization data can provide information on the extent to which minority populations interact with the nation's health care delivery system. These data also can be used to crudely assess the health status of sub-populations of our society, since health conditions, their number and severity, have been shown to be major correlates of the use of health care services. (1) However, assessments of health status based on utilization should be attempted with extreme

caution since utilization data are likely to strongly reflect financial access to care among a particular group rather than their actual health status. Therefore utilization data is also used to indicate differences in access to health care.

Three basic categories of health service utilization—physician contacts, hospitalizations, and long-term institutionalization in nursing and personal care homes—are the primary focus of this chapter's discussion. Use of mental health and substance abuse facilities is treated in Chapter IX, Mental Health, and dental utilization is discussed in Chapter VIII, Dental Health.

Physician contacts are defined as a consultation with a physician or health care provider working under a physician's supervision. National data break down physician contacts according to the place of contact—usually the physician's private office or a facility such as a hospital outpatient department or a community clinic. Less often, the contact occurs over the telephone or elsewhere, such as the patient's home.

There are several possible purposes for a contact including preventive reasons; diagnosis or treatment of existing illness; and rehabilitation or maintenance in the case of a long-term health problem. "Another reason for rendering care is the maintenance or custodial care of medically fragile or dependent adults or children, in which the personal, as well as medical care, needs of the patient are met." (2) Partly because of this multiplicity of reasons, total physician contacts are only a crude indicator of health status.

The measure used to analyze physician contacts in this chapter is the average annual number of contacts per person. Data on the time interval since the last physician contact are presented in Chapter III, Prevention.

Sources of data for the categories of health services utilization in this chapter are interviews of the U.S. civilian noninstitutionalized population, for physician contacts; private-physician records, for data on use of physician specialists; hospital records, for hospitalization data; and records of nursing and personal care homes, for data on use of long-term care. Sampling procedures for all of these sources are intended to produce national estimates representative of the entire U.S. population and subgroups within it.

Throughout the discussion in this chapter, patterns of use of medical services among population subgroups are compared, with particular attention to indicators for minority and low-income groups in relation to indicators for their more advantaged counterparts. Information on minorities covers primarily the Black population, because recent National Health Interview Survey data for other races and by ethnicity are limited. The issue of how the need for medical care is related to the use of medical services is addressed in the final section of this chapter, which discusses the social and economic cost implications of patterns of utilization.

B. Ambulatory Care

1. Physician Contacts

Data on physician utilization over the past 23 years indicate an upward trend in the average annual number of physician contacts per person

in the United States (Table 1). From 4.6 contacts per person nationally in 1964, the mean number of contacts rose to 5.4 in 1987. An increase is evident to varying degrees across the age, sex, race, income, regional, and residential groups. The upward movement in per-person contacts was interrupted around 1980, a period coinciding with a serious setback in the economy.

Between 1980 and 1987, the average annual number of physician contacts per person for Whites increased from 4.8 to 5.5; the increase for Blacks was from 4.6 to 5.1. Thus the Black/White differential in utilization according to this measure increased during the 1980s (see Table 1). Those with family incomes of less than \$10,000 had the largest increase in the average number of physician contacts between 1980 and 1987.

In contrast, there were only slight increases for the two highest income groups from 1980 to 1987, whereas the three lower income groups, which include Medicaid recipients and many retirees on Medicare, experienced increases in their average number of contacts of 11 percent or more (see Table 1).

The population age 65 and over had a relatively large increase in mean physician contacts from 1964 to 1987 (Table 1). Their average increased from 6.7 in 1964 to 8.9 in 1987. The notable 1980-87 increase (from 7.6 to 8.9 contacts per person) probably largely reflects the shift from inpatient to outpatient care by older persons, a shift beginning during the early 1980s.

The temporary reversals in the economy that occurred in the early 1980s, and which

resulted in high unemployment rates and the loss of employment-related insurance for many workers during the period, may be reflected in the decline in average number of physician contacts per person that were reported between 1975 and 1980 for virtually all groups of Americans (see Table 1). However, the declines varied markedly across population subgroups. For example, persons age 65 years and above, most of whom were insured by Medicare, experienced only a 3 percent drop in their mean number of contacts. The second-lowest income group (\$10,000 to \$14,999) experienced a 15 percent drop. The lowest income group, many of whom were presumably protected by Medicaid, had a 7 percent decline in their average number of contacts. This was a larger decrease than that experienced by the middle income groups (\$15,000 to \$19,999 and \$20,000 to \$34,999). During the recessionary period, poverty rates rose while Medicaid enrollment remained fairly stable, (3) implying reduced access to care among some of the poor and newly poor, and thus a relatively large decline in mean physician contacts for the lowest-income group.

Whereas race and income are no longer large sources of variation in total per person physician contacts, physician services utilization is still directly related to age and sex. Average number of contacts is highly correlated with age and is best described by a U-shaped curve. Older people and the very young tend to use more services (see Table 2). Females have more physician contacts per person than males (6.0 vs. 4.6 in 1987). Obstetric visits by women in the childbearing years (ages

15 to 44) increase physician use for this age and sex category, but continuing through old age, females have more physician contacts than males. In the past, the overall sex difference in mean number of contacts was due mainly to health care utilization for prenatal and postnatal care and associated problems. However, recent increases in the proportion of the female population over the age of 65 years, combined with the higher need for health care of this age group, have also contributed to the higher average number of contacts for females.

Current data on physician utilization by ethnicity are limited. No utilization indicator that is comparable to mean annual number of physician visits is available by ethnic group. Table 3 presents another measure, the proportion of the population age 18 and over with six or more physician visits in the previous year. Data for this measure from the National Health Interview Survey, 1985-86, are presented for Hispanics and Mexican Americans, according to birthplace (U.S.-born or foreign-born). Foreign-born Hispanics are slightly less likely than U.S.-born Hispanics to have had six or more physician contacts in the previous year. Foreign-born Mexican Americans were less likely to have had six or more contacts than other foreign-born Hispanics, with the exception of those age 65 and over who are one-third more likely to have such contacts (40.2 percent vs. 33.0 percent). Family income was also a more important factor for foreign-born Mexican Americans. Twelve percent of those with incomes of \$20,000 or less

had 6 or more contacts, vs. 18 percent of total Hispanic immigrants in the same income level.

As Hendershot (4) and Chavez et al. (5) have suggested, many factors are involved in treatment-seeking behavior of foreign-born Hispanics. Such factors include unmet need (poor health status but low access to care), culture, and legal status.

2. Office-Based Physician Visits

Most physician contacts take place in the doctor's office. In the National Health Interview Survey, doctor's office refers to the office of any physician in private practice, including physicians connected with prepaid group practices. (6) The category of office-based visits thus excludes visits to physicians practicing in hospital clinics or outpatient departments, or in community clinics not privately operated. Comparisons cannot be made prior to 1983 because doctors' office visits were previously defined to include clinics and group practices. After 1983, those locations were included with "Other".

For example, in 1983, only 44.3 percent of all contacts with the doctor by Black persons took place in a doctor's office, compared with 57.6 percent for White persons, a 23 percent difference. In 1987, 47.2 percent of physician contacts for Black persons took place in the doctor's office, compared with 58.6 percent of contacts for White persons, a 21 percent difference (Figure 1).

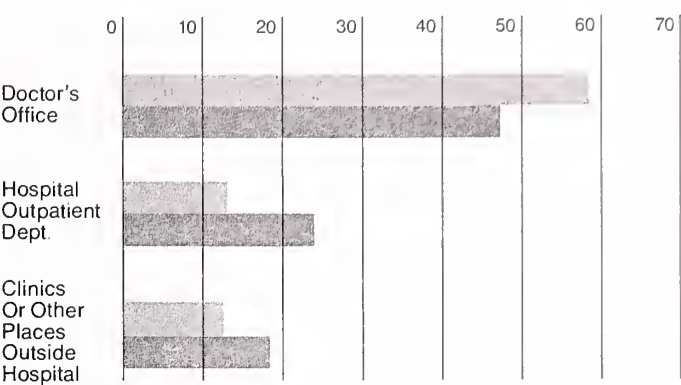
Use of doctor's offices appears to be related to the ability to pay for services. In 1983, 49.9 percent of all physician contacts by persons in the lowest income group (\$10,000 or less) took

place in the doctor's office, compared with 59.7 percent for persons in the highest income group, a difference of 20 percent. By 1987, this gap widened considerably: 43.8 percent of all physician contacts by persons in the lowest income group took place in the doctor's office, compared with 62.3 percent of all contacts by persons in the highest income group, a difference of 42 percent (Table 2 and Figure 2).

This positive relationship between income and use of private physicians is partly explained by the greater likelihood of health insurance coverage among higher-income groups. (7) (See Chapter XII, Health Insurance Coverage and Health Care Expenditures, for further discussion of uninsured persons.) A positive association between income and use of private, office-based care is promoted in addition by the frequent practice on the part of private physicians of not accepting Medicaid patients, (3) and the use of hospitals as sources of charity care among patients who are poor and uninsured. (8) There is also evidence of a shortage of private doctors' offices in some inner city and rural communities, leading to use of clinic care, or to reduced levels of care, for minority and low income populations in these areas. (9) (10) (11) (12)

Most often, physician contacts involve consultation with a general or family practitioner, although the trend noted in a previous edition of this publication toward greater use of specialists continues. Table 4 shows the data on use of specialists, from the National Ambulatory Medical Care Survey (NAMCS), a survey of private, office-based

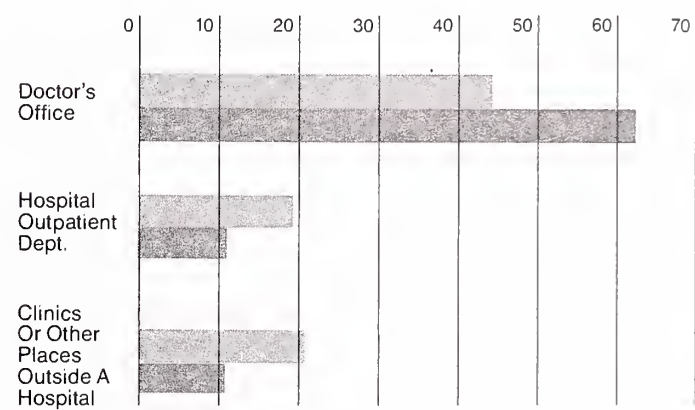
Figure 1
Physician contacts by place of contact, by race of patients, United States, 1987.



Source: Compiled by the Division of Disadvantaged Assistance, BHP based on data in Table 2 of this chapter.

White Black

Figure 2
Physician contacts by place of contact, for high and low income patients United States, 1987.



Source: Compiled by the Division of Disadvantaged Assistance, BHP based on data in Table 2 of this chapter.

Family Income Less than \$10,000 Family Income \$35,000 or More

physicians. The means for total visits reported in Table 4, based on NAMCS, are substantially lower than those in Table 2, from the NHIS, mostly because they do not take into account visits to nonoffice-based physicians such as hospital outpatient visits.

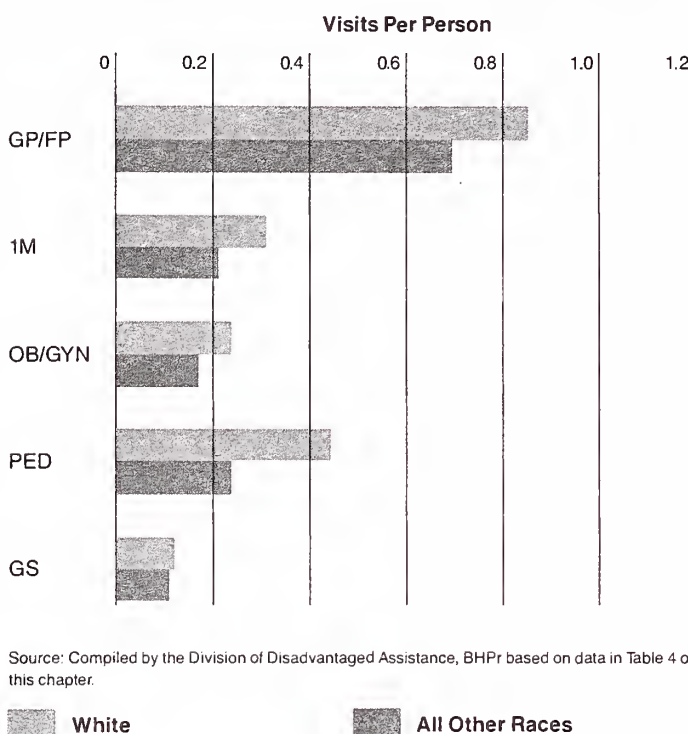
The existing disparity between White and minority use of internal medicine specialists and pediatricians increased over the period 1975–85. In 1975, physicians reported that their White patients made an average of 0.29 visits to internal medicine specialists, while minorities made an average of 0.23 visits. By 1985, the physicians reported that White patients were making an average of 0.31 visits per person to internal medicine specialists, while minorities made an average of 0.21 visits. The disparity in pediatric visits was even more striking: in 1975, White patients made 59 percent more visits to pediatricians than did minorities (0.27 visits vs. 0.17 visits). By 1985, the difference was 87 percent: 0.43 visits per person for White patients vs. 0.23 visits for minority patients (Figure 3).

3. Outpatient Department/ Emergency Room Physician Visits

The NHIS did not change the definition of the hospital-based physician visits, so longer term comparisons are possible for this category. The percentage of all physician contacts which were in a hospital outpatient department, emergency room, or hospital clinic increased from 13.1 percent in 1980 to 14.1 percent in 1987. Blacks and poor Americans continued to use hospital emergency rooms and outpatient departments

Figure 3

Office visits to physicians by physician specialty and race of patients: United States, 1985



Source: Compiled by the Division of Disadvantaged Assistance, BHP based on data in Table 4 of this chapter.

for physician contacts at a significantly higher rate than Whites and those with higher incomes. For example, in 1980, 1983, and 1987, Blacks used this locus of care 2.3, 2.0, and 1.8 times more than did Whites, respectively. Similarly, those with an income of \$10,000 or less used hospital emergency rooms and outpatient departments 2.3, 1.6, and 1.7 times more than those in the highest income level for the same years.

4. Visits in Other Settings and in the Home

As of 1983, the National Health Interview Survey, defined the "Other" category as any location other than a hospital or physician's office, including clinics and HMOs not located in hospitals. By 1987, 20.3 percent of contacts by the lowest income group and 18.3 percent of contacts by the

Black population were in "Other" settings, compared with 11.1 percent of contacts by the highest income group and 12.5 percent by Whites (Table 2). Over the four-year period, 1983–87, the only significant differences in use of the "Other" category was for the lowest income group. In 1983, 17.7 percent of those with incomes of \$10,000 or less had physician contacts at some other location, as compared with 20.3 percent in 1987. This 15 percent difference is reflected in less visits to doctor's offices.

In 1983, NHIS began to report home visit physician contacts as a separate category. The proportion of physician contacts made in this category increased from 1.5 percent in 1983 to 2.1 percent in 1987 (Table 2).

Notably, the groups in which the increase was most significant were Blacks (1.1 percent in 1983 to 3.1 percent in 1987), those with incomes of \$10,000 or less (1.5 percent to 3.9 percent) and those 65 to 74 years old (3.4 percent to 6.3 percent). (The proportion of home visits for those 75 years and over actually decreased in the same four-year period, from 14.3 percent to 11.9 percent.)

5. Telephone Contact With Physicians

By National Health Interview Survey definition, telephone contact with a physician constitutes a physician visit even though there is no physical encounter between the physician and the patient. (13) Between 1964 and 1987, the percentage of telephone contacts has remained relatively stable for all demographic groups, with the exception of 1982 when there was a sharp increase of 22 percent over 1981. (14) This lasted through 1983; in 1984, the proportion decreased to 13.8 percent. (15) (16) (17) In 1987, the proportion was 13.4 percent (Table 2). Telephone contacts usually constitute simple diagnoses, follow-up advice, and requests for or information regarding prescriptions.

In 1987, children under 15 had the highest percentage of telephone contacts, 17.1 percent. Females have always had a higher percentage of telephone contacts than males and the gap between male and female use of the telephone for physician contact has hardly changed over the period; in 1987 there was a 29 percent difference. Blacks use the telephone for physician contacts far less frequently than do Whites. In 1987, Blacks made 7.8 percent of their physician

contacts by telephone, compared to 14.1 percent by Whites.

In 1983, the proportion of physician contacts by telephone varied considerably by income group (12.4 percent for those in the lowest income category vs. 19 percent for those in the highest income category) (see Table 2). However, in 1987, 12.8 percent of the contacts made by the lowest income group were by telephone vs. 13.8 percent for those in the highest income group. What began as a very sizable gap in the proportion of telephone contacts between the highest and the lowest income groups has become very small over the period. In 1964, the percentage of telephone calls for the highest income group was nearly three times the percentage for the lowest income group. By 1987, their percentage was only 8 percent higher. (14) (18)

C. Inpatient Care

While the findings for physician visits suggest variations in access to ambulatory care services, inpatient hospitalization data identify those who make the greatest demand upon the more intensive (and expensive) services, whether for health reasons or by virtue of better ability to pay. (19) Since 1980, there have been dramatic reductions in hospital discharge rates and average length of stay in hospital—an outcome reflecting changes in medical practice, in reimbursement schemes, and in the health status of patients. These reductions are evident in all age, sex, race, income, regional, and residential groups within the population. Variations in the two measures of hospital use

between 1964 and 1987 are shown in Table 5.

1. *Discharges from Short-Stay Hospitals*

Hospital discharge rates are a measure of the frequency of hospital usage per 1,000 population in a year, age adjusted. Between 1981 and 1987, hospital discharge rates decreased to levels below those reported for 1964. Between 1964 and 1981 the upward trend in utilization probably reflects improved access to services by groups who most needed care and who had the greatest unmet need for care, following the enactment of Medicare and Medicaid in 1965. The phase after 1981 probably reflects the changes in public and private payor reimbursement policies which occurred in the early 1980s. These policy shifts emphasized cost containment and a shift away from inpatient care.

For all age groups over 44 years, annual discharge rates become higher with increasing age. In 1987 discharge rates for patients age 75 years and over were more than six times greater than those for patients 15 years of age and under (see Table 5). In 1981, female discharge rates were higher than male discharge rates, but by 1987 this was reversed. This 1981 difference was not due to births, because delivery discharges were excluded from the summary data in Table 5. Black discharge rates also fell between 1981 and 1987, following the national trend; but Black rates were so low in 1964 (84.0 compared with the national average of 109.1) that the 1987 Black rate remained higher than the 1964 rates for Blacks. This may reflect an earlier serious unmet need for care within the Black

population before the implementation of Medicare and Medicaid.

Between 1964 and 1987, Black and White differences in the annual hospital discharge rate actually reversed. Whereas in 1964 the Black hospital discharge rate was a low 84.0, compared with a White rate of 112.4, by 1987 the Black rate was up to 117.4, compared with the White hospital discharge rate of 94.8 (see Table 5). By 1987 the White hospital discharge rate was slightly below the national average of 96.5, while the Black rate was 1.45 times higher than the national average. Blacks' current high discharge rates may partly reflect the relatively poorer health status of this population.

All income groups, except the highest, reflected the national trend in hospital utilization, with discharge rates peaking in 1981, and falling off thereafter; however, those groups with family incomes of less than \$15,000 continued to show discharge rates in 1987 which remained higher than those for 1964, which once again may reflect the unmet need of the earlier period. In 1964, the lowest income group also had the lowest hospital discharge rate; but by 1981, the poor had the highest reported rates. In 1987, the discharge rate was 143.7 for those with family incomes less than \$10,000, compared with 77.1 for those with family incomes of \$35,000 and above. This sizable difference reflects in part the poorer health status of this low-income population.

Table 6 presents the proportion of the U.S.-born and foreign-born Hispanic population age 18 and over with one or more hospital stays in the last year. In every

age, sex, education, and income category, foreign-born persons were less likely than U.S.-born persons to have one or more hospital stays. Though for most categories the differences were small, birthplace was a significant factor for those with less than 12 years of education and for those whose family income was less than \$20,000. In the first category, 11.6 percent of foreign-born persons reported having had one or more hospital stays compared with 15.0 percent of U.S.-born persons. In the second category, 10.4 percent of foreign-born vs. 13.5 percent of U.S.-born respondents had one or more hospital stays. Similarly, differences between foreign-born Mexican Americans and the U.S.-born population were small.

2. *Length of Stay within Short-Stay Hospitals*

There was a decline in the national average length of stay for each reported year, from 8.9 days in 1964 to 6.7 days in 1987. A decline was repeated in all age, race, and income groups except children between the ages of 5 and 14 years (Table 5).

Males, Blacks, low-income persons, people residing in the Northeast, and residents of metropolitan areas are groups, in addition to older persons, that have a longer average length of stay. In particular, the tendency of males, Blacks, and low-income persons to have longer lengths of stay can be taken as an indicator of these patients' more severe medical status when hospitalized, although personal, financial incentives, and social circumstances also play an important role in determining length of stay.

In 1964 Blacks, though much less likely to be hospitalized than Whites, had hospital stays averaging 12.7

days, compared to Whites' average stay of 8.6 days—a 48 percent difference (see Table 5). By 1981, more than 15 years after the enactment of Medicare and Medicaid, the Black excess in average length of stay had decreased to 25 percent, probably reflecting this population's improved access to hospital care. Six years later, the excess was 21 percent (8.0 for Blacks and 6.6 for Whites). Thus, the current excess in length of stay is an improvement over earlier years. But, it may still reflect continuing barriers to medical care owing to widespread poverty in the Black population.

Since at least 1964, the length of stay has been associated with income level of the patient in that the two lowest-income groups, with very similar average lengths of stay, had longer stays than the three higher income groups. By 1981, when the national average length of stay was 12 percent lower than it had been in 1964, the two lowest-income groups had experienced percentage declines considerably larger than that. As with the Black population, between 1964 and 1981, the large decrease in average length of stay for the low-income groups could be related to the increased access to care made possible by Medicare and Medicaid. During the next six years, the lowest-income group experienced the smallest percentage decline in average length of stay (5 percent vs. a national average of 14 percent). This may partly reflect a relative insensitivity of this income group to cost-containment measures affecting length of stay, which may, in turn, result from their poorer health status and economically

imposed barriers to hospital use. In 1987, the difference between the lowest income group and the highest income group was 23 percent (7.6 days for the lowest and 6.2 days for the highest).

3. *Surgical Procedures within Short-Stay Hospitals*

Between 1975 and 1980, there was a 3.2 percent increase in the percentage of hospital inpatients who had surgical procedures, with the national average increasing from 41.7 percent to 44.9 percent (see Table 7). By 1985, the national trend had begun to level out with a 1 percent increase over the five-year interval from 1980. In 1987, 47.4 percent of discharged patients had surgical procedures; a 1.5 percent increase in the two-year period. Between 1980 and 1987, minorities had higher rates of increase in surgical procedures than did Whites (3.4 percent vs. 5 percent). However, Whites still have a slightly higher proportion of surgical procedures than minorities (47.4 percent vs. 46.5 percent). It should be noted, however, that 16 percent of patient records included in this hospital survey did not have race designated. The small differences by race must therefore be considered judiciously.

D. **Extended Care Facility Utilization**

"Long term care facilities include long-stay psychiatric and other hospitals (i.e., hospitals with an average length of stay of 30 days or more), nursing homes, facilities for the mentally retarded, homes for dependent children, homes or resident schools for the emotionally disturbed, resident facilities for drug

abusers or alcoholics, and various other institutions . . .

"Most extended care facilities are in nursing homes. Nursing homes provide both restorative care for convalescing patients and continuing care for older persons. Nursing homes provide less intensive nursing and medical services than acute care hospitals. These homes have multiplied as the demand for these services by the older population has increased. The trend of greater demand is expected to continue in the future as life expectancy increases." (20) The most likely reasons for greater use of these services in the last 20 years are: implementation of Medicare and Medicaid, programs which cover part of the cost of these services; fiscal pressure by third-party payers on short-stay hospitals to discharge patients no longer needing acute care services; the aging of the population, leading to larger proportions of infirm older Americans, many of whom require long-term, professional care; and changes in society and within the family which make home care less feasible.

Utilization of long-term institutions specializing in mental illness is discussed in Chapter IX, Mental Health. In the remainder of this section, attention is centered on older persons, particularly those residing on a long-term basis in nursing homes. Aging Americans, especially Black older persons, are generally poorer compared with other adult age groups. (3)

For older Americans, the decade beginning with the mid-1960s marked a period of extremely rapid growth in the use of long-term care facilities. This upsurge in use

"resulted when eligibility requirements for public payments for nursing home care were liberalized in the mid-1960s and then again in 1972, particularly under the Medicaid program. Use of nursing homes also increased as older patients were shifted from long-term psychiatric institutions to nursing homes. This shift occurred because states could receive federal matching funds under Medicaid for nursing home care but not for care provided in long-term psychiatric hospitals. Prior to Medicaid, eligibility for public payments was so limited that many potential nursing home users were unable to obtain such care." (20)

As shown in Table 8, over the 22-year period 1963 to 1985, the proportion of the population over age 65 who were residents in nursing homes nearly doubled, from 25.4 per 1,000 in 1963 to 46.2 per 1,000 in 1985. This proportion was consistently higher for the oldest age groups: in 1985, 12.5 per 1,000 of those aged 65 to 74 years were in nursing homes, compared with a rate of 220.3 per 1,000 of those aged 85 years and over, reflecting the greater use of these facilities with increasing age. However, the actual utilization rate of long-term care facilities of the growing older population began to decline sometime after 1977. This decline, apparent in all race and income groups in Table 8 except Blacks over age 74, may be related to changes and improvements in care of older Americans, reduced disability rates, and generally improved health status.

Race differences in nursing home use are large (see Table 8). Among Whites, the rate of nursing home residency was 47.7 per 1,000 population age 65 and over

in 1985. Among Blacks, the rate was considerably lower, 35.0 per 1,000. In 1985, older Whites were more than one-third as likely as older Blacks to be residents in a nursing home. However, because nursing home use among Blacks has been increasing substantially, the difference between the Black and White rates narrowed dramatically since 1963, when the White rate was 158 percent higher. The actual percentage of nursing home residents who were Black grew from 3.1 in 1963, to 3.9 in 1973-74, to 5.4 in 1977, and finally to 6.2 in 1985. The impact of Medicaid on access to nursing home care is one probable factor in the increasing rate of nursing home use among the Black older population.

The pattern of Black and White differences in nursing home use varies by age. Black and White differences in nursing home use favor Blacks among the "young" old age 65 to 74. In both 1977 and 1985, the Black rate of residency in nursing homes in this age group was approximately 25 percent higher than the White rate. Among persons age 75 to 84, Whites are 30 percent more likely to be in a nursing home than Blacks, and in the oldest age group, over 85 years, they are 62 percent more likely to reside in a nursing home. Thus, beyond age 74, the White excess in nursing home use increases with advancing age.

Due to increases in the numbers and proportions of older persons within the population, the growth in need for long-term care will continue. In 1987, those age 65 years and over made up 12.2 percent of the total population. (21) The proportion of the population

65 years and over is growing at a faster rate than that of any other age group, with the proportion 85 and over having the greatest growth rate. A 1976 study estimated that 25 percent of the older population would be institutionalized at some time during their later years. (22)

E. Social and Economic Cost Implications

Health care utilization data have been interpreted in more than one way. Population differences in utilization indicate greater morbidity in the higher users, since "perceived need" for health care, as well as provider initiatives, dictates the use of health services. But population differences in utilization are also thought to reflect differences in ability to pay for care. Thus, increases in use over time among the disadvantaged have been interpreted as an indication of a prior unmet need, since health services have not always been available or accessible to them. Wilson and White pointed out, "It is interesting that in the dental area, where there have been only minimal efforts to increase access to care, there have been no changes between the poor and the nonpoor in the amount of dental care received. On the other hand, for hospital and physician care, where more program efforts have taken place, there have been reductions or eliminations of differences in utilization between the poor and the nonpoor". (23)

Actually, both explanations apply to utilization patterns discussed in this chapter. Even though utilization rates have increased substantially for minorities and low income groups, these populations continue to experience higher morbidity, and have less access to health care. (24)

(25) (26) Since these two factors, morbidity and access, are associated with disadvantaged status, crude race or income differences in utilization data can be misleading. A study by Kleinman et al. in 1981 showed that although the poor have elevated physician visit rates, after adjusting for age and poorer health status, they have between 7 percent and 44 percent fewer visits than those with income above twice the poverty level. (27) This is not to say that no positive signs exist in the statistics presented in this chapter. Some can be taken to imply improved health status as well as improved access to services.

Table 1

Physician contacts by selected patient characteristics: United States 1964, 1975, 1980, 1983, and 1987

Characteristic	Physician contacts				
	1964	1975	1980	1983	1987
	Number per person				
Total ^{1, 2}	4.6	5.0	4.7	5.1	5.4
Age ³					
Under 15 years	—	—	—	4.6	4.5
Under 5 years	—	—	—	6.9	6.7
5–14 years	—	—	—	3.3	3.3
15–44 years	—	—	—	4.4	4.6
45–64 years	5.0	5.6	5.1	5.8	6.4
65 years and over	6.7	6.6	6.4	7.6	8.9
65–74 years	—	—	—	7.3	8.4
75 years and over	—	—	—	8.2	9.7
Sex ¹					
Male	4.0	4.4	4.1	4.4	4.6
Female	5.1	5.6	5.3	5.7	6.0
Race ^{1, 4, 5}					
White	4.7	5.1	4.8	5.2	5.5
Black	3.6	4.9	4.6	4.9	5.1
Family Income ^{1, 6}					
Less than \$10,000	3.9	5.9	5.5	5.9	6.8
\$10,000–\$14,999	4.2	5.2	4.4	5.0	5.6
\$15,000–\$19,999	4.7	5.0	4.9	4.7	5.2
\$20,000–\$34,999	4.8	4.9	4.7	5.0	5.2
\$35,000 or more	5.2	5.0	4.6	5.4	5.4
Geographic region ¹					
Northeast	4.5	5.3	4.7	4.9	5.2
Midwest	4.4	4.7	4.7	5.2	5.6
South	4.3	4.6	4.6	4.8	5.1
West	5.5	5.9	4.9	5.4	5.5
Location of residence ^{1, 7}					
Within MSA	4.8	5.3	4.9	5.2	5.5
Outside MSA	4.1	4.4	4.4	4.6	4.8

¹ Age adjusted.² Includes all other races not shown separately and unknown family income.³ Distributions by age are incomplete, data for years prior to 1983 were categorized differently.⁴ In 1964 and 1975, the racial classification of persons in the National Health Interview Survey was determined by interviewer observation. In 1980, race was determined by asking the household respondent.⁵ Includes all other races not shown separately and unknown family income.⁶ Adjusting for inflation, corresponding income categories in 1964 were: less than \$2,000; \$2,000–\$3,999; \$4,000–\$6,999; \$7,000–\$9,999; and \$10,000 or more; in 1975 were: less than \$5,000; \$5,000–\$6,999; \$7,000–\$9,999; \$10,000–\$14,999; and \$15,000 or more; and in 1980 were: less than \$7,000; \$7,000–\$9,999; \$10,000–\$14,999; \$15,000–\$24,999; and \$25,000 or more.⁷ Metropolitan Statistical Area.

Note: In previous editions of Health, United States, physician contacts were labeled physician visits.

Source: National Center for Health Statistics, Health, United States, 1988. Department of Health and Human Services Pub. No. (PHS) 89–1232. U.S. Government Printing Office, Mar 1989, Table 61, p. 106 and National Center for Health Statistics, Health, United States, 1982. Department of Health and Human Services Pub. No. (PHS) 83–1232. U.S. Government Printing Office, Dec 1982, Table 35, p. 90.

Table 2

Physician contacts, by place of contact and selected characteristics: United States, 1983 and 1987

Characteristic	Physician contacts		Total	Place of contact									
	1983	1987		Doctor's office		Hospital outpatient department ¹		Telephone		Home		Other ²	
				1983	1987	1983	1987	1983	1987	1983	1987	1983	1987
						Number per person				Percent distribution			
Total ^{3,4}	5.1	5.4	100.0	56.1	57.1	14.9	14.1	15.5	13.4	1.5	2.1	12.0	13.4
Age													
Under 15 years	4.6	4.5	100.0	54.7	57.9	13.3	12.8	20.5	17.1	*0.3	*0.7	11.2	11.6
Under 5 years	6.9	6.7	100.0	54.2	57.6	13.2	13.0	21.0	18.3	*0.5	*0.6	11.1	10.5
5-14 years	3.3	3.3	100.0	55.3	58.2	13.3	12.6	20.0	15.6	*0.1	*0.8	11.2	12.7
15-44 years	4.4	4.6	100.0	54.9	56.4	16.5	14.5	14.3	12.3	0.6	0.7	13.7	16.1
45-64 years	5.8	6.4	100.0	59.0	56.9	15.3	15.3	12.5	12.2	1.8	3.6	11.4	12.1
65 years and over	7.6	8.9	100.0	59.2	57.8	12.4	13.8	11.9	9.9	7.9	8.6	8.7	9.9
65-74 years	7.3	8.4	100.0	60.7	59.1	14.2	14.7	11.4	9.3	3.4	6.3	10.3	10.7
75 years and over	8.2	9.7	100.0	56.9	55.9	9.8	12.7	12.7	10.7	14.3	11.9	6.3	8.8
Sex ⁽³⁾													
Male	4.4	4.6	100.0	54.8	57.0	17.1	15.7	13.5	11.4	1.5	1.8	13.2	14.0
Female	5.7	6.0	100.0	56.8	56.9	13.6	13.1	16.8	14.7	1.5	2.3	11.2	13.0
Race ⁽³⁾													
White	5.2	5.5	100.0	57.6	58.6	13.4	12.8	16.3	14.1	1.5	2.0	11.1	12.5
Black	4.9	5.1	100.0	44.3	47.2	26.8	23.5	9.7	7.8	1.1	3.1	18.2	18.3
Family income ⁽³⁾													
Less than \$10,000	5.9	6.8	100.0	49.9	43.8	18.5	19.2	12.4	12.8	1.5	3.9	17.7	20.3
\$10,000-\$14,999	5.0	5.6	100.0	52.3	51.1	17.6	17.8	13.0	13.4	2.0	1.7	15.1	16.0
\$15,000-\$19,999	4.7	5.2	100.0	54.5	54.7	16.7	16.8	16.4	12.6	1.3	1.8	11.1	14.1
\$20,000-\$34,999	5.0	5.2	100.0	59.3	59.6	13.3	12.6	16.2	14.9	0.7	1.3	10.5	11.5
\$35,000 or more	5.4	5.4	100.0	59.7	62.3	11.6	11.2	19.0	13.8	1.1	1.7	8.6	11.1
Geographic region ⁽³⁾													
Northeast	4.9	5.2	100.0	58.3	56.5	15.6	15.8	14.1	12.5	1.8	3.5	10.2	11.6
Midwest	5.2	5.6	100.0	53.5	53.2	14.7	14.5	17.2	15.6	1.2	1.7	13.5	15.0
South	4.8	5.1	100.0	56.9	61.1	14.5	12.6	15.7	12.3	1.9	2.2	11.1	11.9
West	5.4	5.5	100.0	56.0	56.4	15.3	14.4	14.5	13.4	0.8	0.7	13.3	15.1
Location of residence ⁽³⁾													
Within MSA	5.2	5.5	100.0	54.9	55.7	15.7	14.6	16.0	13.8	1.3	2.1	12.2	13.7
Outside MSA	4.6	4.8	100.0	59.1	62.1	13.2	12.0	14.5	12.1	1.9	1.7	11.4	12.1

¹ Includes hospital outpatient clinic, emergency room, and other hospital contacts.² Includes clinics or other places outside a hospital.³ Age adjusted.⁴ Includes all other races not shown separately and unknown family income.

* Relative standard error greater than 30 percent.

Note: Data are based on household interviews of a sample of the civilian noninstitutionalized population. In previous editions of Health, United States, physician contacts were labeled physician visits.

Source: National Center for Health Statistics, Health, United States, 1988, Department of Health and Human Services Pub. No. (PHS) 89-1232, Washington, U.S.

Government Printing Office, Mar 1989, Table 61, p. 106.

Table 3

Percent of persons 18 years of age and over who had six or more physician contacts in the last year, by age, sex, education, and annual family income, by birthplace and Hispanic origin: United States, 1985-86

Characteristic	U.S.-born			Foreign-born		
	Total ¹	Hispanic		Total ¹	Hispanic	
		Total ²	Mexi- can		Total ²	Mexi- can
Age						
18 years and over	18.5	16.7	16.1	16.2	16.0	12.4
18–44 years	15.2	14.7	14.2	12.2	12.1	9.0
45–64 years	19.4	20.3	19.3	17.2	20.2	16.0
65 years and over	29.1	30.1	33.0	29.2	35.3	40.2
Sex						
Male	13.3	10.4	9.7	10.6	9.4	6.7
Female	23.1	22.1	21.6	21.2	22.5	19.3
Education						
Less than 12 years	23.2	19.4	19.1	19.8	18.1	13.1
12 years	17.3	15.3	14.5	14.8	14.4	*9.7
More than 12 years	16.8	15.6	14.3	13.4	12.5	*11.5
Annual family income						
Less than \$20,000	21.9	19.2	18.6	18.6	17.9	12.2
\$20,000 or more	16.5	14.5	13.6	14.2	13.3	12.0

¹ Includes persons of unknown Hispanic origin.

² Includes persons of unknown Mexican origin.

* Figure does not meet standard of reliability or precision.

Note: Data are based on household interviews of the civilian noninstitutionalized population.

Source: National Center for Health Statistics, "Health of the Foreign-born Population: United States, 1985-86." Advance Data No. 157, Jun 13, 1988, Table 6, p. 4.

Table 4

Office visits to physicians, by physician specialty and selected patient characteristics: United States, 1975, 1980, and 1985

Characteristic	All specialties ¹			General and family practice			Internal medicine			Obstetrics and gynecology			Pediatrics			General surgery		
	1975	1980	1985	1975	1980	1985	1975	1980	1985	1975	1980	1985	1975	1980	1985	1975	1980	1985
Visits per person																		
Total ²	2.69	2.63	2.71	1.11	0.86	0.81	0.28	0.30	0.30	0.22	0.23	0.22	0.25	0.37	0.40	0.19	0.13	0.12
Age																		
Under 15 years	1.89	2.21	2.31	0.65	0.54	0.58	0.04	0.03	0.05	0.02	0.01	0.01	0.83	1.20	1.28	0.05	0.05	0.03
15-44 years	2.52	2.36	2.28	1.03	0.81	0.75	0.20	0.20	0.19	0.44	0.48	0.44	0.03	0.04	0.06	0.19	0.12	0.10
45-64 years	3.43	2.99	3.10	1.52	1.08	0.99	0.56	0.58	0.49	0.13	0.12	0.15	0.00	0.01	0.01	0.33	0.20	0.21
65 years and over	4.26	4.22	4.85	1.94	1.56	1.41	0.82	0.95	1.07	0.05	0.06	0.07	0.01	0.01	0.01	0.34	0.22	0.30
65-74 years	NA	4.01	4.54	—	1.49	1.31	—	0.89	1.00	—	0.06	0.09	—	0.00	0.00	—	0.23	0.29
75 years and over	NA	4.58	5.35	—	1.70	1.57	—	1.06	1.18	—	0.05	0.04	—	0.01	0.01	—	0.20	0.32
Sex ²																		
Male	2.25	2.25	2.28	0.95	0.73	0.68	0.25	0.28	0.25	0.00	0.01	0.00	0.26	0.39	0.38	0.16	0.12	0.11
Female	3.14	2.98	3.11	1.25	0.98	0.94	0.32	0.33	0.33	0.42	0.44	0.42	0.25	0.34	0.42	0.22	0.13	0.14
Race ²																		
White	2.76	2.73	2.84	1.12	0.89	0.84	0.29	0.31	0.31	0.22	0.23	0.22	0.27	0.39	0.43	0.20	0.13	0.12
All other	2.25	2.03	1.94	1.05	0.70	0.69	0.23	0.24	0.21	0.23	0.23	0.18	0.17	0.25	0.23	0.13	0.08	0.11

¹ Includes other specialties not shown separately.² Age adjusted.

NA: Not available.

Note: Rates are based on the civilian noninstitutionalized population, excluding Alaska and Hawaii.

Data are based on reporting by a sample of office-based physicians.

Source: National Center for Health Statistics, Health, United States, 1982. Department of Health and Human Services Pub. No. (PHS) 83-1232, Washington, U.S.

Government Printing Office, Dec 1982, Table 37, p. 92 and National Center for Health Statistics, Health, United States, 1988. Department of Health and Human Services

Pub. No. (PHS) 89-1232, Washington, U.S. Government Printing Office, Mar 1989, Table 63, p. 108.

Table 5

Discharges, days of care, and average length of stay in short-stay hospitals, by selected characteristics: United States, 1964, 1981, and 1987

Characteristic	Discharges			Days of care			Average length of stay		
	1964	1981	1987	1964	1981	1987	1964	1981	1987
	Number per 1,000 population								
	Number of days								
Total ^{1,2}	109.1	121.7	96.5	970.9	952.1	649.7	8.9	7.8	6.7
Age									
Under 15 years	67.6	64.3	48.6	405.7	343.1	263.9	6.0	5.3	5.4
Under 5 years	94.3	109.5	84.0	731.1	651.3	489.2	7.8	5.9	5.8
5-14 years	53.1	42.0	29.7	229.1	191.1	143.8	4.3	4.6	4.8
15-44 years	100.6	97.0	69.2	760.7	626.2	407.0	7.6	6.5	5.9
45-64 years	146.2	175.1	143.3	1,559.3	1,565.5	987.9	10.7	8.9	6.9
65 years and over	190.0	283.6	255.8	2,292.7	2,843.3	2,111.1	12.1	10.0	8.3
65-74 years	181.2	258.8	227.4	2,150.4	2,407.5	1,862.8	11.9	9.3	8.2
75 years and over	206.7	325.4	301.2	2,560.4	3,578.1	2,507.8	12.4	11.0	8.3
Sex ¹									
Male	103.8	119.3	100.1	1,010.2	1,008.4	702.9	9.7	8.5	7.0
Female	113.7	123.8	93.9	933.4	903.1	605.7	8.2	7.3	6.5
Race ¹									
White	112.4	120.0	94.8	961.4	912.5	621.5	8.6	7.6	6.6
Black ³	84.0	137.7	117.4	1,062.9	1,302.4	942.8	12.7	9.5	8.0
Family income ^{1,4}									
Less than \$10,000	102.4	165.1	143.7	1,051.2	1,318.5	1,086.0	10.3	8.0	7.6
\$10,000-\$14,999	116.4	137.5	132.6	1,213.9	1,158.0	956.9	10.4	8.4	7.2
\$15,000-\$19,999	110.7	124.5	102.4	939.8	1,056.0	701.1	8.5	8.5	6.8
\$20,000-\$34,999	109.2	119.8	87.9	882.6	841.7	573.1	8.1	7.0	6.5
\$35,000 or more	110.7	104.6	77.1	918.9	773.8	475.5	8.3	7.4	6.2
Geographic region ¹									
Northeast	98.5	106.0	84.5	993.8	944.9	620.5	10.1	8.9	7.3
Midwest	109.2	129.1	105.8	944.9	1,006.0	657.5	8.7	7.8	6.2
South	117.8	140.1	108.6	968.0	1,076.2	768.9	8.2	7.7	7.1
West	110.5	95.8	78.3	985.9	649.1	471.5	8.9	6.8	6.0
Location of residence ¹									
Within MSA	107.5	110.3	92.9	1,015.4	926.9	656.3	9.4	8.4	7.1
Outside MSA	113.3	144.0	109.2	871.9	997.3	634.0	7.7	6.9	5.8

¹ Age adjusted.

² Includes all other races not shown separately and unknown family income.

³ 1964 data include all other races.

⁴ Family income categories for 1987. Income categories in 1964 are: less than \$2,000; \$2,000-\$3,999; \$4,000-\$6,999; \$7,000-\$9,999; and \$10,000 or more; and, in 1981 are: less than \$7,000; \$7,000-\$9,999; \$10,000-\$14,999; \$15,000-\$24,999; and \$25,000 or more.

Note: Data are based on household interviews of a sample of the civilian noninstitutionalized population.

Source: National Center for Health Statistics, Health, United States, 1988. Department of Health and Human Services Pub. No. (PHS) 89-1232. Washington, U.S. Government Printing Office, Mar 1989, Table 66, p. 111.

Table 6

Percent of persons 18 years of age and over who had one or more hospital stays in the last year, by age, sex, education, and annual family income, according to birthplace and Hispanic origin: United States, 1985-86

Characteristic	U.S.-born			Foreign-born		
	Total ¹	Hispanic		Total ¹	Hispanic	
		Total ²	Mexican		Total ²	Mexican
Age						
18 years and over	10.8	9.7	9.7	9.5	10.0	8.9
18–44 years	9.0	9.5	9.8	8.1	9.5	8.8
45–64 years	10.5	8.2	7.5	7.8	7.7	6.3
65 years and over	18.1	17.7	17.5	17.0	18.4	15.6
Sex						
Male	8.6	5.5	4.8	7.0	5.6	4.2
Female	12.8	13.4	14.1	11.8	14.2	14.5
Education						
Less than 12 years	15.0	11.7	11.6	11.6	10.1	9.2
12 years	10.2	9.2	8.7	10.0	10.9	9.8
More than 12 years	8.8	8.2	8.7	7.1	8.5	6.2
Annual family income						
Less than \$20,000	13.5	11.7	11.5	10.4	10.3	8.8
\$20,000 or more	9.1	7.7	7.7	8.6	9.3	9.0

¹ Includes persons of unknown Hispanic origin.

² Includes persons of unknown Mexican origin.

Note: Data are based on household interviews of the civilian noninstitutionalized population.

Source: National Center for Health Statistics, "Health of the Foreign-born Population: United States, 1985-86." Advance Data No. 157, Jun 13, 1988, Table 5, p. 3.

Table 7

Number of patients discharged from short-stay hospitals, with procedures, by age, sex, and race of patient, and geographic region of hospital: United States, 1975, 1980, 1985, and 1987

Characteristic	All discharged patients				Patients with surgical procedures			
	1975	1980	1985	1987	1975	1980	1985	1987
	Number in thousands							
All patients	34,042	37,832	35,056	33,387	14,189	17,005	16,097	15,830
Age								
Under 15 years	3,826	3,672	2,972	2,688	1,689	1,385	991	842
15-44 years	14,171	15,635	13,966	13,142	6,557	8,846	7,921	7,665
45-64 years	8,391	8,660	7,610	7,099	3,579	3,575	3,369	3,302
65 years and over	7,654	9,864	10,508	10,459	2,363	3,198	3,816	4,022
Sex								
Male	13,519	15,145	14,160	13,568	5,401	5,975	5,789	5,729
Female	20,523	22,686	20,896	19,818	8,787	11,031	10,308	10,101
Race								
White	25,715	28,484	26,379	24,376	10,705	12,828	12,121	11,543
All other	3,798	4,879	5,181	5,174	1,482	2,105	2,281	2,405
Race not stated	4,529	4,469	3,497	3,836	2,002	2,072	1,695	1,881
Geographic region								
Northeast	7,351	7,868	7,168	6,699	3,314	3,677	3,248	3,127
North Central	10,677	10,378	9,111	8,718	4,494	5,022	4,239	4,069
South	10,562	12,983	12,274	11,292	3,902	5,304	5,403	5,192
West	5,454	6,103	6,502	6,678	2,479	3,003	3,207	3,442

% patients with surgical procedures

1975 1980 1985 1987

Percent

41.7 44.9 45.9 47.4

44.2 37.7 33.3 31.3

46.3 56.6 56.7 58.3

42.7 41.3 44.3 46.5

30.9 32.4 36.3 38.5

40.0 39.4 40.9 42.2

42.3 48.6 49.3 51.0

41.0 45.0 45.9 47.4

39.0 43.1 44.0 46.5

44.2 46.4 48.5 49.0

45.1 46.7 45.3 46.7

42.1 46.2 46.5 46.7

37.0 40.4 44.0 46.0

45.4 49.2 49.3 51.5

Note: Discharges from non-Federal short-stay hospitals. Excludes newborn infants. Source: (1) National Center for Health Statistics, Utilization of Short-stay Hospitals: Annual Summary for the United States, 1975. Department of Health, Education and Welfare Pub. No. (HRA) 77-1782. Series 13, No. 31, U.S. Government Printing Office, Washington, Apr 1977, (2) National Center for Health Statistics, Utilization of Short-stay Hospitals: Annual Summary for the United States, 1980. Department of Health and Human Services Pub. No. (PHS) 82-1725, Series 13, No. 64, U.S. Government Printing Office, Washington, Mar 1982, (3) National Center for Health Statistics, Utilization of Short-stay Hospitals, United States, 1985, Annual Summary. Department of Health and Human Services, Pub. No. (PHS) 87-1752, Series 13, No. 91, U.S. Government Printing Office, Washington, May 1987, Table F, p. 11, (4) E.J. Graves, National Hospital Discharge Survey: Annual Summary, 1987. National Center for Health Statistics. Vital and Health Statistics, Series 13, No. 99, Apr 1989. Department of Health and Human Services Pub. No. (PHS) 89-1760, Table G, p. 11.

Table 8

Nursing home and personal care home residents 65 years and over and rate per 1,000 population, by sex and race: United States, 1963, 1973-74, 1977, and 1985

Age, sex and race	Residents				Residents per 1,000 population ¹			
	1963	1973-74 ²	1977 ³	1985	1963	1973-74 ²	1977 ³	1985
Age								
All Ages	445,600	961,500	1,126,000	1,318,300	25.4	44.7	47.1	46.2
65-74 years	89,600	163,100	211,400	212,100	7.9	12.3	14.4	12.5
75-84 years	207,200	384,900	464,700	509,000	39.6	57.7	64.0	57.7
85 years and over	148,700	413,600	449,900	597,300	148.4	257.3	225.9	220.3
Sex								
Male	141,000	265,700	294,000	334,400	18.1	30.0	30.3	29.0
65-74 years	35,100	65,100	80,200	80,600	6.8	11.3	12.6	10.8
75-84 years	65,200	102,300	122,100	141,300	29.1	39.9	44.9	43.0
85 years and over	40,700	98,300	91,700	112,600	105.6	182.7	146.3	145.7
Female	304,500	695,800	832,000	983,900	31.1	54.9	58.6	57.9
65-74 years	54,500	98,000	131,200	131,500	8.8	13.1	15.8	13.8
75-84 years	142,000	282,600	342,600	367,700	47.5	68.9	75.4	66.4
85 years and over	108,000	315,300	358,200	484,700	175.1	294.9	262.4	250.1
Race ⁴								
White	431,700	920,600	1,059,900	1,227,400	26.6	46.9	48.9	47.7
65-74 years	84,400	150,100	187,500	187,800	8.1	12.5	14.2	12.3
75-84 years	202,000	369,700	443,200	473,600	41.7	60.3	67.0	59.1
85 years and over	145,400	400,800	429,100	566,000	157.7	270.8	234.2	228.7
Black	13,800	37,700	60,800	82,000	10.3	22.0	30.7	35.0
65-74 years	5,200	12,200	22,000	22,500	5.9	11.1	17.6	15.4
75-84 years	5,300	13,400	19,700	30,600	13.8	26.7	33.4	45.3
85 years and over	3,300	12,100	19,100	29,000	41.8	105.7	133.6	141.5

¹ Residents per 1,000 population for 1973-74 and 1977 will differ from those presented in the sources because the rates have been recomputed using revised census estimates for these years (see source note).

² Excludes residents in personal care or domiciliary care homes.

³ Includes residents in domiciliary care homes.

⁴ For data years 1973-74 and 1977, all Hispanics were included in the white category. For 1963, black includes all other races.

Note: Data are based on a sample of nursing homes.

Source: National Center for Health Statistics, Health, United States, 1988. Department of Health and Human Services Pub. No. (PHS) 89-1232, Washington. U.S. Government Printing Office, Mar 1989, Table 74, p. 123.

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A. Introduction*1. Overview of Findings*

Between 1965 and 1987, national health care expenditures grew by a factor of 12 to \$500 billion. In 1987, health care spending amounted to 11.1 percent of the total Gross National Product (GNP) which is twice the proportion in the average western industrialized country. Important factors in the nation's health care spending are the following: the growing numbers and proportions of older persons within the population; the increased need for long-term care and expensive tertiary care; the changes in the use and kinds of medical goods and services; and the rising prices of medical goods and services.

Even with such high spending on medical care, many people in the United States incur little or no expenditures, signifying variations in health status, but also inequities in the means to pay for care.

In the United States, the bulk of health services for acute care is financed by a mixture of public and private insurance. Private insurance is almost exclusively employment-related and differs widely in terms of coverage. Blacks are almost twice as likely as all others, and Black children are nearly four times as likely as all other children to have public insurance when they do have insurance. Primary features of present health insurance coverage by race/ethnicity and age are the disproportionate coverage of

minorities by public insurance; the disproportionate coverage of Whites by private insurance; and the almost universal coverage of the older population.

Americans under age 65 who have neither private nor public insurance, numbered 37 million in 1987, or 17.6 percent of the total population. People without insurance use less health care, especially preventive and primary care, than those with insurance, even though their health status is often poorer. Increasing the number of persons with health insurance, a national priority, is a complex problem because the uninsured are a heterogeneous population with personal characteristics, incomes and access to health care that vary significantly. Lack of insurance is most common among young adults, Blacks, Hispanics, and persons in families where no one is employed. Yet, working families account for three-quarters of the uninsured since public insurance largely covers the poor with no earned income.

The increased number of people without health insurance and those with limited coverage (i.e., the underinsured) has expanded the volume of uncompensated hospital care. Combined with the larger uninsured population and increased competition for paying patients, hospitals have become less able (and often less willing) to absorb these costs. One result has been the transfer of emergency indigent patients, often before they are stabilized, from private to public hospitals.

In 1988, nearly 25 million Americans were covered by Medicaid, the public insurance program supported by states and the federal government; 16.6 million poor children and their parents, 3.5 million poor persons age 65 and over, and 3.4 million disabled persons were eligible. Minorities are more likely to be covered by Medicaid than Whites, reflecting the higher incidence of poverty among these groups. In 1986, about 27 percent of Medicaid beneficiaries were Black, and eight percent were Hispanic. Although the young poor comprised the largest group eligible for the Medicaid program, they accounted for only 12.3 percent of Medicaid expenditures in 1987, with the bulk of the remainder spent on behalf of recipients over 64. Many cite the inadequacy of the nation's long-term care financing system, in addition to the pronounced aging of the population, to explain the disproportionate Medicaid expenditures on older persons.

Fiscal pressures on the Medicaid program in the early 1980s resulted in a net enrollment reduction of approximately 5 percent. About half of all persons who lost Medicaid eligibility were able to replace it with group health insurance. The others remain uninsured and there is considerable concern that this group will delay obtaining necessary medical care. Studies have shown that individuals dropped from Medicaid also have experienced a deterioration in

their access to health care services.

Subsequent legislation enacted in 1984 and 1985 actually expanded Medicaid coverage for pregnant women and children, and in 1986, Congress enacted legislation that gave states the option to cover all pregnant women and children in single or two-parent families up to the federal poverty level. The results of this legislation are being watched very closely; it is expected to be a major factor in Medicaid eligibility and increased access to health care services by the poor in the years to come.

Despite the recent legislative changes that have broadened Medicaid eligibility, Medicaid's coverage of the poor and of poor children in particular is eroding. By estimate, only 41 percent of the poor were covered by Medicaid during 1986; of the remainder, 26 percent were covered by other private or public insurance, and 33 percent had no insurance of any kind. Despite a dramatic increase in the number of poor children in the early 1980s, the number of poor children covered under Medicaid remained at the same level. Roughly one-half of all poor children are currently covered by Medicaid. The low-income population therefore faces large gaps in Medicaid coverage across the states.

More than 27 million Americans 65 and over and another 2.8 million disabled workers were insured by Medicare in 1984. Older Americans are almost universally covered by Medicare. The program's beneficiaries pay premiums

for coverage of doctor bills and certain other services, and some may incur substantial out-of-pocket expenses as a result of Medicare's cost-sharing requirements and coverage limitations. These costs can be so devastating financially that well over 70 percent of all Medicare enrollees purchase additional supplementary private insurance, referred to as Medigap insurance, to cover these costs. Medicaid pays for the premium and copayment costs of an additional 8 percent of Medicare recipients. There are great concerns that the out-of-pocket costs may be prohibitive for the remaining one-fifth of Medicare enrollees without additional insurance. In addition to leaving older Americans financially vulnerable, the gaps in Medicare insurance may limit older persons from obtaining needed medical services.

The 8 percent of Medicare enrollees who also receive Medicaid benefits are actually only one-third of all poor older persons. The access to and use of health care services is enhanced for those with supplemental Medicaid coverage. Poor older persons without Medicaid spend an average of one-fourth of their annual income on out-of-pocket expenditures, more than double the proportion spent by those who qualify for Medicaid.

The almost 20 percent of Medicare enrollees who are without private Medigap or Medicaid supplementary coverage are generally sicker, older, and poorer, than their counterparts with supplemental coverage. One policy response to the concern about the risk of

large out-of-pocket expenses faced by some enrollees was the controversial Medicare Catastrophic Coverage Act of 1988, which was repealed in 1989.

2. *Data Sources and Their Limitations*

A variety of data sources were used in this chapter to obtain information on the health insurance coverage and health care expenditures of Americans. Data were obtained from the first household interview of the 1987 National Medical Expenditure Survey (NMES). The NMES researchers oversampled Blacks, Hispanics, the poor and near poor, older persons and the functionally impaired in order to improve estimates of these population groups of special policy interest.

A second data source was the Census Bureau Survey of Income and Program Participation (SIPP). Surveying from June 1983 to March 1986, SIPP compared individuals who moved into and out of private and public health insurance plans. Third, the most recent March 1988 Current Population Survey (CPS) was utilized to indicate the number of uninsured Americans. Since 1980, during March of each year, the Bureau of Census conducts a supplement to the CPS which includes questions on the health insurance coverage of each adult family member. Finally, relevant data from the National Health Interview Survey and the Health Care Financing Administration were used.

3. *Financial Expenditures for Health Services*

National health care expenditures increased enormously during the past three decades. In 1965 (before the enactment of the

Medicare and Medicaid programs), national health care expenditures were \$41.9 billion; by 1987, they amounted to \$500 billion, a 12-fold increase (see Table 1). The increases were generally steady, with the largest occurring between 1965 and 1970 (46 percent) and 1980 and 1985 (30 percent). (1) Even after adjusting for inflation, the increase in health care expenditures since 1965 has been a remarkable 230 percent (Table 2). Change in health care per capita spending has also been dramatic. Table 3 indicates, in inflation-adjusted dollars, that there was nearly a threefold increase in per capita health expenditures from 1965 to 1987.

Table 4 compares total health care expenditures, as a percent of the GDP (Gross Domestic Product), for the United States and other western industrial countries from 1960 to 1986. While the U.S. has always been among the countries with the highest health care expenditures, only the U.S. experienced a double-digit percentage of its GDP spent on health care in 1985 and 1986. In 1986, the overall mean percentage of the GDP spent by these industrial countries on health expenditures was 7.3 percent; for the U.S., it was 11.1 percent, 52 percent greater than the average. Sweden had the second-highest national health care expenditure, comprising 9.1 percent of its GDP in 1986.

Examining the allocation of U.S. health care expenditures in 1987, Table 2 reveals that hospital care costs comprised the largest component. Hospital care alone represented 39 percent of total health care spending in

1987. (1) The next largest category was physician expenditures, 21 percent.

In Table 5, the distribution of payments for personal health care expenditures by source of payment indicates that since 1975, approximately 60 percent of payments have been from private sources while 40 percent have been from public sources. Private sources of payment are equally divided between private health insurance and direct patient payment; each source paid a little less than one-third of the national health care bill. The remaining 40 percent was paid by the federal government (30 percent) and state and local governments (10 percent). Federal sources of personal health care expenditures include Medicare and Medicaid, which contributed 18.4 percent and 11.3 percent, respectively, to the total federal portion of U.S. health care costs in 1987. A little over 1 percent of the national health care bill was paid by philanthropy and workplace health services.

B. *Distribution of Health Care Expenditures Across Population Groups*

Historically and today, the distribution of health care expenditures is heavily skewed (2), for example, between 1928 and 1931, 5 percent of the population incurred 52 percent of the nation's health care costs. (2) In 1980, the distribution was similar, with 5 percent of the population incurring 55 percent of health care costs and a smaller percentage, 1 percent, incurring 29 percent; on the other hand, 50 percent of the population accounted for only 4 percent of all health care expenditures. The

distribution of health expenses on a small group became more concentrated between 1970 and 1980; the proportion of the total expenditures spent on 1 percent of the population grew from 26 percent to 29 percent, while remaining stable at 4 percent for the 50 percent of the population using health care services the least. Therefore, as Berk et al. wrote in 1988, "Cost containment efforts that try to get "average" people to use services more prudently will not have a large impact on total national expenditures. Expenditures for service by the majority of the population who are moderate users do not appear to be the force behind the problem of rising health care costs." (2)

There have been marked changes in the demographic characteristics of persons in the top 1 percent in terms of health care expenditures in the U.S. (Table 6). The most notable change was the 30 percent increase between 1970 and 1980 of persons 65 years and over within the top 1 percent. In the same period, Blacks began an increased use of Medicaid and public assistance that resulted in a 55 percent increase in the percent of Blacks within the top 5 percent of persons ranked by health care expenditures. Not surprisingly, approximately 95 percent of all persons with fifteen or more disability days were in the top 1 percent. Table 6 suggests that the poor, the older population, and the very ill, have increasingly become the heaviest users of health care services and thus, have disproportionately high expenditures for health care.

C. Uninsured Populations and the Medically Indigent

1. Overview of Rates of Health Insurance Coverage

In the United States, the bulk of health services is financed by a mixture of public and private insurance. Private insurance is almost exclusively employment-related and differs widely in terms of coverage. Public insurance is notable in almost universally covering the older population and disabled and in covering some of the nation's poor. Table 7 indicates the sources of health insurance for two race groupings, Blacks and all others, obtained from the March 1985 Current Population Survey (CPS), conducted by the U.S. Bureau of the Census. The data are recorded for people of all ages and for three specific age groups: children, adults under 65, and adults 65 and older. Regardless of additional coverage, persons insured by an employment-related plan are classified in the first category, "employment-related"; persons with either Medicare or Medicaid are classified in the "public" category; and the few persons with insurance other than employment-related or public are placed in the "other" category. One final category consists of persons without health insurance of any kind.

Table 7 indicates that in 1985, Blacks were almost twice as likely as all others to have public sector insurance (28 percent and 16 percent, respectively); Black children were nearly four times as likely as all other children to have public insurance (31 percent and 8 percent, respectively). Americans 65 and over of both race groups are almost universally

covered by either public insurance (89 percent and 88 percent of Blacks and all others respectively) or through employment-related insurance (an additional 8 percent and 10 percent of Blacks and all others, respectively). Americans other than Blacks have much higher rates of private insurance, as reflected by both employment-related insurance (62 percent vs. 47 percent) and by other (generally expensive) private insurance (7 percent vs. 3 percent). Examining the uninsured population by racial category reveals that more than one of every five Blacks of all ages and one of every four Black children was uninsured in 1985. Blacks were about 1.5 times as likely as all others to be uninsured. The authors who developed Table 7 note that:

"These sharp differences in the sources of health insurance are in all likelihood a reflection of underlying differences in the structure and economic circumstances of Black and nonBlack families." (3)

The Survey of Income and Program Participation (SIPP), is also used by the Census Bureau to examine health insurance coverage. Table 8 indicates that in the fourth quarter of 1985, the most recent period for which these data are available, 87 percent of the total population was covered by private or public insurance. Whites were more likely to be covered than Blacks (87.6 percent vs. 80.7 percent) and Blacks were more likely to be covered than Hispanics (80.7 percent vs. 73.0 percent). Young people, Blacks, and Hispanics were less likely than the general population to

be covered by private health insurance. Less than 50 percent of the total Black and Hispanic population were covered by employment-related health insurance, compared to nearly two-thirds of the White population. Tables 7 and 8 summarize the important features of health insurance coverage by race and age: the disproportionate minority coverage by public insurance; the disproportionate White enrollment in private insurance; and the almost universal coverage of older persons.

2. The Medically Uninsured

The ability to pay is one of the most important factors affecting the use of health services in the United States. Increasing the number of persons with health insurance in order to expand access to health care is one of the most important issues in health care today. The problem is complex because the uninsured are a heterogeneous population with personal characteristics, incomes, and access to health care that vary significantly. In 1987, 17.6 percent of the population under age 65, i.e., 37.1 million Americans, were without any type of private or public health insurance (see Table 9).

Between 1980 and 1987, the percentage of the population under age 65 without health insurance coverage increased by 2.7 percent. This increase is a reversal of the steady downward trend that characterized the period after World War II. (4) Among the factors contributing to the higher percentage of uninsured Americans is a decrease in the number of persons able to obtain employment-related health

insurance, an increase in insurance costs which outpaced growth in incomes, and the growth of employment industries that are less likely to offer health coverage. Many low-income families who are ineligible for Medicaid are also unable to afford private insurance. Even if a family member is employed, he or she may not receive insurance benefits.

The uninsured face serious problems in accessing health services and obtaining medical care. Davis et al. have shown that the uninsured poor have only one third as many hospital days as the poor with Medicaid coverage or private insurance. (5) The average number of physician visits per year also varied according to insurance coverage; the uninsured poor averaged 3.4 visits per person compared to 4.9 visits per person for the poor with Medicaid and 4.6 visits per person for the nonpoor. In 1987, the U.S. Government Accounting Office interviewed 1,115 women who were either Medicaid-covered or uninsured, and analyzed questionnaire responses from physicians on prenatal care delivered to over 4,000 privately insured women. Uninsured women received the least care; they began prenatal care later and made fewer visits to health care providers than women with private health insurance. (6)

Analyses based on the 1977 National Medical Care Expenditures Survey (NMCES) and the 1980 National Medical Care Utilization and Expenditure Survey (NMCUES) have indicated that the employed uninsured use fewer health services than insured

workers, even after controlling for health status. (7) In addition to the empirical evidence that lack of insurance is a barrier to access, a 1982 national sample of adult Black Americans indicated that being uninsured was related to strong perceptions of restricted access to health care services. (8) These perceptions in turn led to decreased use of private, office-based physicians and increased use of hospital emergency rooms as a source of health care.

In summary, the uninsured obtain less health care, especially preventive and primary care, than those with insurance, even though the health status of the uninsured is often poorer. Such comparisons implicitly assume that the higher levels of use among the insured are an appropriate standard for measurement, and this is not necessarily true. Nevertheless, they raise concerns about equitable access to health care for low-income and minority populations.

2.1 Characteristics of the Uninsured

Table 10 shows the percent distribution of the uninsured under age 65 by selected characteristics. The data were collected from Round I of the National Medical Expenditure Survey, conducted in 1987. Approximately 17.4 percent of the population under age 65 was without private or public health insurance at the time of interview. This varied substantially by race/ethnicity—14.2 percent of all Whites, 23.8 percent of all Blacks, and 32.9 percent of all Hispanics were uninsured in 1987. When the population was examined by age, persons between 19 and 24 were about twice as likely to

be uninsured (30.2 percent) as persons in other age groups. This is not surprising since persons in this age group have recently entered adulthood and are no longer beneficiaries of their parents' private or public insurance, but may not have employment-related coverage of their own.

Table 10 also shows that marital status is a strong predictor of health insurance coverage; married persons were about twice as likely to be insured as their single or never married counterparts in 1987. Differences in health insurance coverage across regions were also evident. The Northeast and North Central regions had much smaller percentages of uninsured population (12.8 percent and 12.6 percent, respectively) than the South and West (21.3 percent and 21.5 percent, respectively). (The salient features that distinguished the regions from one another were state Medicaid eligibility and type and availability of employment.) In general then, the highest percentages of uninsured persons are found among young adults, Blacks, Hispanics, and persons in families where no one is employed.

Notably, children 18 years of age and younger accounted for one-third of all the uninsured. Geographically, nearly 75 percent of the uninsured population lived in metropolitan areas, and 41.4 percent lived in the South. Although workers and their families were much less likely to be uninsured than their unemployed counterparts, workers accounted for about one-half of the total population under age 65 that was uninsured.

2.2 Characteristics of the Employed Uninsured

The employed uninsured together with their families accounted for more than three-fourths of the uninsured population in 1987. Because most insurance in the United States has traditionally been obtained privately and through employment, the growing number of employed uninsured has received considerable attention in recent years. Numerous policies to expand employment-related health insurance through employer financial incentives or through legislative mandates have been advocated. (9) (Such proposals would not cover the more than 20 percent of the uninsured who are in families where no one is employed.)

Table 11 summarizes the health insurance status of working adults and their families. Differences in employment account for substantial variations in health insurance coverage. Full-time employees are about half as likely (12.7 percent) to be uninsured as part-time or self-employed workers (24.1 percent and 22.9 percent, respectively). The type of employment is also related to health insurance coverage for a worker and his/her family. The following industries were characterized by work forces that were roughly 30 percent uninsured: agriculture; construction; personal services; and entertainment. In these industries, the lack of employment-related health insurance can be attributed to the high percentages of part-time or self-employed workers, the seasonal nature of the work, and the absence of unions. Specifically, the growth of employment in such industries as construction and retail trade that are less likely to offer

health coverage has been cited as a major contributing factor to the increase in the number of uninsured Americans. (10) Finally, the smaller employment establishments have the highest rates of uninsured employees.

The last category in Table 11, Hourly Wage of Working Adults, along with Table 12, examines the relationship between worker earnings and employment health insurance coverage. Table 11 indicates that persons in families in which the wage-earners make \$5 or less per hour are almost twice as likely as those in which wages are \$5 to \$10 per hour, and more than three times as likely as those in which wages are \$10 or more per hour, to be uninsured. When employers don't finance insurance, these earnings (\$5 or less per hour) preclude the family from purchasing private insurance while also rendering the family ineligible for Medicaid. Similarly, Table 12 indicates that 88.6 percent of workers earning less than \$5,000 per year and 62.2 percent of workers earning less than \$5,000 to \$9,999 per year are not insured. Families in which the wage-earners make \$10 or less per hour comprise over 60 percent of all uninsured under age 65.

In summary, workers most likely to be excluded from employment-related health insurance are low-wage workers, employees of small firms, the self-employed, and employees in seasonal or temporary employment fields. A study based on the Census Bureau's Survey of Income and Program Participation (SIPP), for the period between June 1983 and March 1986, found that, when compared to all persons who lose coverage, the long-term

uninsured were most likely to be poor or near-poor and have less attachment (i.e., number of hours, weeks of work) or access to employment-related health insurance coverage. (11) It should be re-emphasized, however, that the employed uninsured are a diverse group that includes many prime-age workers and workers in favorable economic circumstances.

Several options to improve access to health care for the uninsured have been suggested. (12) (13)

Changes from the public side have included suggestions to expand Medicaid to include all poor or near-poor. This would greatly increase health care access for the economically disadvantaged and also greatly increase federal and state spending, and for that reason, it is controversial. The actual proportion of poor currently eligible for public health insurance will be discussed in later sections, whereupon the cost ramifications of expanding the Medicaid program will be more evident. On the private side, suggestions to require employers to provide insurance to all employees are fraught with uncertainty. Employers counter that this will result in dramatic adjustments including price increases, reduced wage and salary growth, and changes in hiring practices. (10)

3. *The Medically Indigent and Uncompensated Health Care*

At a recent National Conference of State Legislatures, states identified medical indigence as their number one health issue for 1989. (14) The medically

indigent usually refers to low-income uninsured persons who are unable to pay for their medical care. A second group that contributes to the cost of uncompensated care (i.e., unpaid medical bills) is the underinsured.

Underinsured persons are unable to afford the medical costs not covered by their insurance, such as deductibles, co-payments, or services not covered by an insurance policy. Conventional fee-for-service insurance plans often lack coverage for preventive services such as physical examinations, pre- and post-natal care, and preventive diagnostic procedures. (15) In addition, many insurance companies do not cover pre-existing conditions such as heart disease, cancer, or diabetes.

The increased number of people without health insurance or with limited coverage has expanded the volume of uncompensated hospital care. Hospitals have traditionally passed the cost of uncompensated care on to paying patients. Changes in reimbursement payment mechanisms, in particular the introduction of the Medicare Prospective Payment System in 1983, have reduced the revenue available to finance uncompensated care. Combined with a larger uninsured population and increased competition for paying patients, this has made hospitals less able (and often less willing) to absorb these costs. Estimates by the American Hospital Association (AHA) indicate that between 1980 and 1986 "unsponsored care" costs—charity care plus bad debt—more than doubled, amounting to 5 percent of total hospital expenses in 1986. In real figures, this amounts to \$6.96 billion. (1) One result has been the

transfer of emergency indigent patients, sometimes before they are stabilized, from private to public hospitals. Although this "patient dumping" practice is illegal in hospitals that participate in Medicare, it occurs nevertheless. (16)

D. **Public Health Insurance**

1. *Health Coverage for the Poor: Medicaid*

Since its enactment in 1965, Medicaid has greatly expanded the federal government's role in financing health care for the poor. (17) Medicaid provides for most acute medical care as well as long-term care services. Total Medicaid expenditures equaled \$45.2 billion in 1987.

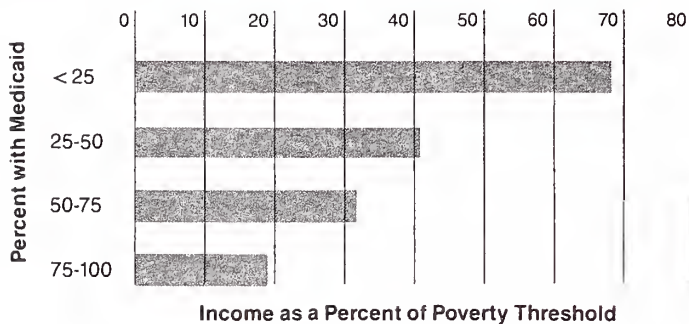
Contrary to common perception, Medicaid is not a broad entitlement program that assures all poor persons access to health care services. The Medicaid eligibility policies are very complex and are determined separately for each state. As a result, the Medicaid program varies widely across states. Figure 1 depicts the Medicaid coverage rate for the poor, taking into account the degree of poverty faced by each individual. For instance, 68 percent of the poor with incomes less than one-fourth of the poverty threshold are covered, while only 19 percent with incomes that are greater than three-quarters of the poverty threshold are covered.

Medicaid is a joint federal/state program in which the federal government matches state expenditures. All states are required to cover, at a minimum, inpatient and outpatient hospital services, physician services, laboratory

Figure 1

Medicaid coverage rates for individuals with incomes below poverty, by degree of poverty, 1986.

(Data from Current Population Survey, Annual March Income Supplements)



Note: Estimate based on pre-welfare income

Source: Congressional Research Service, Committee on Energy and Commerce, U.S. House of Representatives, "Medicaid Source Book: Background Data and Analysis," Nov 1988, U.S. Government Printing Office, Table B-9, p. 336.

and x-ray services, family planning, screening and diagnostic services for children, home health care, and nursing home care. (18) States must enroll individuals receiving cash assistance under the Aid to Families with Dependent Children (AFDC) program and most older persons, blind, and disabled recipients of Supplemental Security Income (SSI). In some states, another group of recipients is eligible for Medicaid if they incur significant medical expenses resulting in the reduction of their income to the Medicaid eligibility limits. This group is called the medically needy, in contrast to the AFDC and SSI recipients, known as the categorically needy.

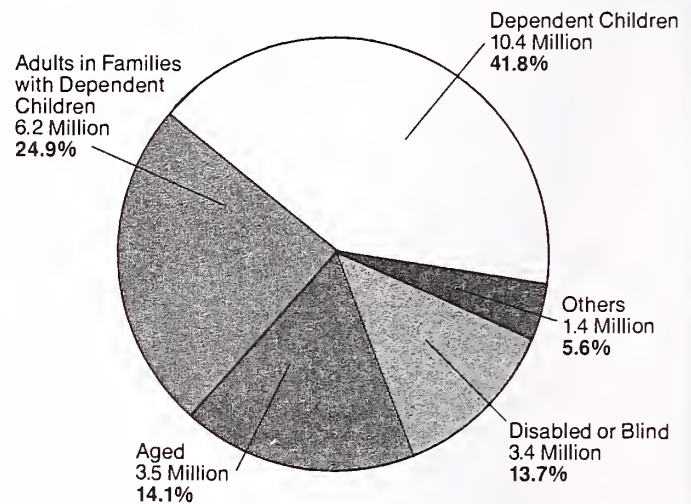
In 1988, nearly 25 million Americans were covered by Medicaid; 16.6 million poor children and their parents, 3.5 million poor older persons, and 3.4 million disabled or blind persons were eligible (see Figure 2). In 1986, about 27 percent of Medicaid beneficiaries were Black, 8 percent were Hispanic, 3 percent were American Indian, Alaskan Native, or

Asian Pacific Islander (see Figure 3). Minorities are more likely to be covered by Medicaid than Whites, reflecting a higher incidence of poverty among these groups. In 1986, for instance, 31.1 percent of Blacks and 27.3 percent of Hispanics compared with 11.0 percent of Whites had incomes below the poverty level. (19) Accordingly, studies have shown that Medicaid paid an average of 30 percent of the hospital expenses incurred by Blacks, compared to only 6 percent for Whites. (20)

Examining the distribution of Medicaid recipients by entitlement category (Table 13) indicates that in 1987 nearly half of all Medicaid recipients were children in AFDC families (44.1 percent), approximately 14 percent were older persons, and 15 percent were blind and/or disabled. Although the young poor comprised the largest eligibility group, they accounted for only 12.3 percent of Medicaid expenditures in 1987. Moreover, this is a reduction by one-third of the proportion

Figure 2

Medicaid beneficiaries, by eligibility status, fiscal year 1988.



Source: Congressional Research Service, Committee on Energy and Commerce, U.S. House of Representatives, "Medicaid Source Book: Background Data and Analysis," Nov 1988, U.S. Government Printing Office, Figure 1-2, p. 3.

of Medicaid expenditures spent on children in 1972 (Table 13). The share of Medicaid expenditures for older persons and the disabled, however, has increased from 52.8 percent to 72.9 percent between 1972 and 1987. Most of these expenditures were for nursing home services and intermediate care facilities for the mentally retarded, and prescription drugs.

The importance of Medicaid coverage in facilitating access to health care for the poor has been shown in several studies. (21) (22) (23)

Research indicates that individuals dropped from Medicaid experience a deterioration in their access to health care services. Long et al. (24) followed one group of newly uninsured poor and found that their use of inpatient hospital services declined 71 percent, use of physician services declined 38 percent, use of dental services declined 61 percent, and purchase of prescription drugs declined 39 percent.

An analysis by Rosenbach (25) demonstrated that Medicaid coverage increases access to office-based physicians among low-income children. Medicaid children were more likely than both privately insured (and often underinsured) and uninsured children to visit an office-based physician. Finally, the role of Medicaid in equalizing access to health care services is revealed by Rowland et al. (18) who indicate that persons with health problems who have Medicaid coverage use services at levels comparable to nonpoor people with health problems.

1.1 Omnibus Budget Reconciliation Act (OBRA) 1981: The Effect on Eligibility

Fiscal pressures on the Medicaid program, always in evidence, have been especially great since 1980; pressure to dampen the growth in the federal budget combined with the escalating

costs of public health insurance made Medicaid a primary target for budget cuts. This culminated in the early 1980s with the passage of the Omnibus Budget Reconciliation Act of 1981 (OBRA). The executive summary of the final report of a 1987 evaluation of the Medicaid program (26) states that "passage of OBRA 1981 initiated the most substantial reforms in the history of the Medicaid program." The legislation imposed a reduction in the federal share of Medicaid expenditures in each state of up to 3 percent in 1982, 4 percent in 1983, and 4.5 percent in 1984. Between 1981 and 1984, federal expenditures on the Medicaid program were cut by \$4 billion. (18) The second component of OBRA 1981 was that states were given much greater discretion over eligibility, benefits, and provider payments in order to reduce program spending.

Since the inception of Medicaid, there has been a

dramatic shift in the program's spending between the two categorical groups entitled to Medicaid benefits: recipients of AFDC and SSI. Although Medicaid was originally created to provide health care to the poor, it has increasingly become the primary financier of long-term care for poor people 65 and over. (27) Many cite the inadequacy of the nation's long-term financing care system in addition to the pronounced aging of the population (28) to explain the disproportionate Medicaid expenditures on the nation's older poor. For instance, Medicaid recipients who reside in nursing homes account for only 7 percent of all Medicaid recipients but generate over 42 percent of the program costs. (29)

OBRA reinforced the shift favoring the older poor. As mentioned, Medicaid is inextricably linked to state and federal welfare policy since four out of five Medicaid recipients qualify

because they live in families that receive AFDC or SSI for the aged, blind, and disabled (Figure 2 and Table 13). Among the most important provisions in the 1981 OBRA was a limitation on the amount of earned income that could be disregarded in determining AFDC eligibility. In turn, this affected the working poor's eligibility for Medicaid. The direct result of the 1981 OBRA, then, was a decline in Medicaid coverage of the recipients of AFDC, i.e., the nonaged poor. Rowland et al. reported that children experienced the most significant loss of coverage, from 52.1 percent of all enrollees to 45.4 percent, followed by nonaged adults, whose coverage fell from 43.2 percent of all enrollees to 38.6 percent. (18)

Statistical analysis by the Medicaid evaluators suggested that in total, OBRA's provisions accounted for a reduction of about 13 percent in Medicaid enrollment. (30) About half of all persons losing Medicaid eligibility were able to replace it with group health insurance. (24) The remainder became uninsured and there is considerable concern that this group will delay obtaining necessary medical care. (24) (26) (18)

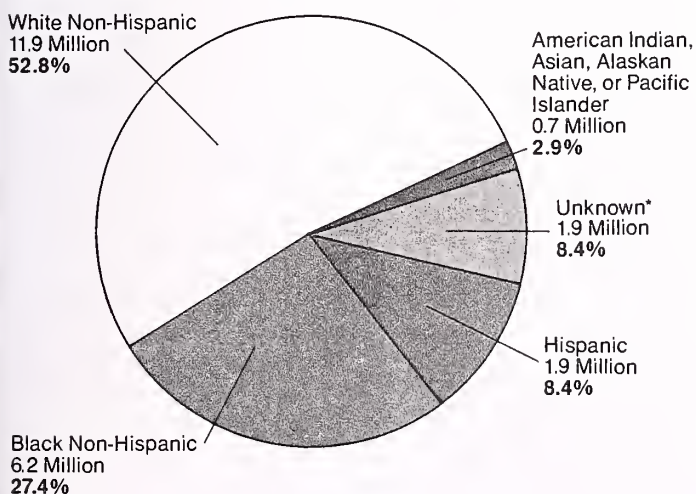
1.2 OBRA Legislation from 1984-1988

The reductions in the federal share of expenditures to the Medicaid program enacted in OBRA 1981 were not extended after they expired in 1984. The OBRA legislative changes made it clear, however, that the federal government can influence the level of Medicaid spending and the number and type of recipients

by altering federal matching rates. Subsequent legislation in OBRA 1984 and 1985 and the Deficit Reduction Act of 1984 (DEFRA) actually expanded Medicaid coverage for pregnant women and children. All states were required to extend coverage to first-time pregnant women and to pregnant women from two-parent households in which the main wage earner was unemployed. Another group of low-income pregnant mothers to be added to the Medicaid program were those in families in which one or both parents were employed but earned an income within AFDC eligibility limits. Finally, all children born on or after October 1, 1983, in low-income, two-parent households were to be covered under Medicaid up to age five.

In 1986, for the first time, Congress enacted legislation that gave states the option to cover all pregnant women and children in single or two-parent families up to the federal poverty level. Since AFDC eligibility levels are below, and sometimes substantially below, the poverty threshold, this means the potential inclusion of substantial numbers of families that were previously ineligible. State responses to the separation of Medicaid eligibility from AFDC suggest widespread concern for the health of low-income children and in particular high infant mortality rates. Twenty-two states raised their Medicaid income eligibility levels for pregnant women and their children to 100 percent of the federal poverty level. (27) This development is being watched very closely and is expected to be a major factor in Medicaid eligibility and increased access to health care services by the poor in the years to come.

Figure 3
Race/ethnicity of Medicaid beneficiaries, fiscal year 1986.



*Racial Characteristics not reported in Maine, Puerto Rico and the Virgin Islands.

Source: Congressional Research Service, Committee on Energy and Commerce, U.S. House of Representatives, "Medicaid Source Book: Background Data and Analysis," Nov 1988, U.S. Government Printing Office, Figure I-6, p. 15.

1.3 Medicaid Eligibility of the Poor

Despite the recent legislative changes that have seemingly broadened Medicaid eligibility, Medicaid's coverage of the poor and of poor children in particular is eroding. The increased mandated coverage of the non-AFDC families and children did not offset the greater decline in coverage caused by the failure of AFDC benefit levels or eligibility thresholds to keep up with inflation. (26) In other words, to make any significant impact in terms of increased coverage for the poor, the income level criteria for Medicaid eligibility must be higher. The ten states with lowest AFDC income levels, for instance, cover only 38 percent of all poor children in their states. (28)

Table 14 shows Medicaid's coverage of poor children between 1979 and 1986. While there was a substantial increase in the total number of poor children in the early 1980s, the number of poor children covered under Medicaid remained at approximately the same level. According to Current Population Survey estimates, roughly one-half of all poor children are currently covered by Medicaid (Table 14). In 1986, 6.7 million children were covered, out of 12.9 million children estimated to be in poverty. The poverty rate among U.S. children was at its highest level in 18 years in 1985, with approximately 22 percent living in poverty. (31) The lowest percentage of poor children with Medicaid coverage occurred in 1981; this was also the year in which the more restrictive AFDC policies were implemented.

Medicaid enrollment trends for the past decade have not coincided with growth in the

total poverty population either. Between 1977 and 1983 the number of poor persons increased by 42.8 percent while the number of Medicaid beneficiaries declined by 5.5 percent. (19) Some of this disparity results from the growth of poor two-parent families which are generally excluded from Medicaid eligibility.

In summary, large segments of the low-income population are excluded from Medicaid across the states. The most recent CPS reported that only 41 percent of the poor were covered by Medicaid during 1986; 26 percent were covered by other private or public insurance, and 33 percent had no insurance of any kind (Table 15). Poor children under 18 had the highest overall coverage rate of any age group (52 percent). About 34 percent of poor adults and 31 percent of poor older persons were covered by Medicaid. Poor single-parent families were more than twice as likely to be covered by Medicaid as poor two-parent families (65 percent and 32 percent, respectively). The high percentage of poor Blacks covered by Medicaid (53.2 percent), compared with poor Hispanics (43 percent), and poor Whites (34 percent), is influenced by the large proportions of Black single-parent families.

1.4 Physician Participation and Quality of Care

Being covered by Medicaid does not necessarily insure the best quality of care, and an important factor in this regard is the physician participation rate in the Medicaid program. Almost one-fourth of all office-based physicians report that they do not participate in the

Medicaid program. (32) Davis et al. note that these percentages are even higher in certain medical specialties: 37 percent of all obstetricians and gynecologists, 39 percent of all cardiologists, and 40 percent of all psychiatrists report nonparticipation. (17) It is also evident that a few physicians have large Medicaid patient populations. Many factors affect physician participation, including malpractice costs, administrative burdens, and the high-risk of the Medicaid population. (33) One of the most important factors is physician fees; in an attempt to reduce payments under Medicaid, states have frozen physician payment levels or set the levels well below Medicare and private rates since the early 1970s.

The limited participation of physicians reduces the opportunities for low-income and minority populations to receive high-quality health care. (17) The limited physician participation in the important specialties listed above may remove Medicaid patients from mainstream medical care and recent technological and public health initiatives. Further disparity between Medicaid and Medicare or private payment levels for physicians could have serious financial repercussions for practitioners with a high volume of Medicaid patients and, ultimately, on the quality of care available to these low-income populations.

2. Health Care for Older Americans: Medicare

Medicare is a federal program for retired and disabled workers that pays part of their costs for health services other than preventive or long-term care. Enrollees share the costs of services covered under Medicare

through copayments (deductibles and coinsurance amounts) as well as premiums and balance-billing amounts (physicians' charges in excess of Medicare's allowed amounts).

Medicare provides two basic forms of coverage: Part A (Hospital Insurance), financed by payroll taxes, covers inpatient hospital services, skilled nursing home care, hospice care, and home health care; and Part B (Supplementary Medical Insurance), a voluntary program partly financed by enrollee premiums, covers physician services, outpatient hospital services and other services such as laboratory costs. In terms of enrollment, the Medicare population has grown from 19.5 million in 1967 to 28.2 million in 1986 (Table 16). The increase in Medicare enrollment mostly reflects the continued aging of the population. The enrollment of the fastest growing segment of the older population, those 85 years and older, has more than doubled in the past two decades.

2.1 Gaps in Medicare Coverage

As a result of Medicare's cost-sharing requirements and coverage limitations, enrollees who require many services in a short period may incur substantial out-of-pocket expenses. The average inflation-adjusted out-of-pocket expense per Medicare enrollee (for Medicare-covered services) increased between 1980 and 1986 by about 73 percent for Part A services and about 36 percent for Part B services. (34) These costs do not include drug expenditures, dental care, and optometry services not covered by Medicare. Since nursing

home care is under the province of Medicaid, a needs-based program, considerable out-of-pocket expenditures by older persons usually precede public payment for nursing home costs. These costs can be so devastating financially that well over 70 percent of all Medicare enrollees purchase additional supplementary private insurance, referred to as Medigap insurance, to cover these costs. Medicaid pays for the premium and copayment costs of an additional 8 percent of Medicare recipients. There are great concerns that the out-of-pocket costs may be prohibitive for the remaining 20 percent of Medicare enrollees who are without additional insurance. This in turn may limit their access to needed health care services. There is concern in general that the present gaps in Medicare leave older Americans financially vulnerable.

Table 17 reveals that in 1986, persons age 65 to 74, although almost universally covered by Medicare, spent 8.6 percent of their income on health care expenditures. Persons 75 years and older spent an extraordinary 14.1 percent of their income on health care needs. A report on Medicare's poor (35) revealed that one-third of the near-poor age 65 and older (persons with incomes between 100 percent and 150 percent of the federal poverty level) are reduced to poverty by their out-of-pocket medical expenditures. The report indicated additionally that when medical expenses were deducted from the incomes of older persons, their poverty rate grew from 12 percent to 17 percent.

2.2 Supplemental Coverage for Older Americans

Some retirees rely on post-retirement health insurance for themselves and their families to supplement Medicare or to serve as their primary source of health insurance if they are less than 65 years of age. Supplemental coverage varies strongly by race and ethnicity. Table 18 describes the type and availability of private insurance coverage for retirees based on various sociodemographic variables.

Roughly half of all retirees age 55 and older had employment-related health insurance. The oldest cohorts among the retirees were less likely to have employment-related health insurance than their younger counterparts, reflecting in part the lack of work-related coverage when employed; (36) only one-third of retirees 75 or older were enrolled in employment-related health insurance plans. To compensate, these retirees were more likely to purchase private insurance to replace the lack of employment-related coverage.

Examining racial/ethnic categories, 51.2 percent of White retirees and their dependents were covered by private employment-related insurance, compared with only 35.9 percent and 25.0 percent for Black and Hispanic retirees and their dependents, respectively. This disparity reflects the work experience of minorities and the fact that they are unlikely to be policy holders of employment-related insurance. (7) Unlike retirees age 75 years and older, minorities appear unable to obtain other private coverage to supplement their Medicare costs.

The disparity between Whites and minorities is even

greater with respect to non-employment-related private coverage; 33.7 percent of White retirees vs. 13.8 percent of Black and 18.6 percent of Hispanic retirees purchased private insurance in 1987 to help pay for out-of-pocket medical expenses. As a result, over half of all retirees in minority groups had no supplemental private insurance to help pay the out-of-pocket costs of health care.

Table 19 describes the private insurance coverage of the entire Medicare population. In 1987, 35 percent of Medicare enrollees had employment-related insurance and an additional 35 percent had private insurance. The one-quarter of all Medicare enrollees who have no private or employment-related coverage are disproportionately represented by minorities. Three times as many Black and Hispanic Medicare recipients had no private coverage, compared to White Medicare recipients (Table 19). Proportionally, more than 60 percent of the minorities surveyed in the NMES Household Survey, compared with less than one-fifth of the Whites surveyed, reported no additional insurance to supplement their Medicare coverage. These differences suggest that significant gaps and inequalities exist in financing health care for older persons.

2.3 Gaps in Coverage for the Poor Age 65 and Over

Some Medicare enrollees also receive Medicaid benefits to cover Medicare's premium and copayment charges. Moreover, in most states Medicaid pays for prescription drug costs. Medicaid eligibility is closely

linked to receipt of Supplemental Security Income benefits. In some states, older persons who have incurred significant out-of-pocket health care expenses relative to their incomes may be eligible under the "medically needy" category.

A report by the Commonwealth Fund Commission on Medicare's poor states that "the impression that Medicaid supplements Medicare for all poor older people is false." (35) In 1987, only a third of all poor persons 65 and over were eligible for Medicaid coverage. The access and use of health care services is enhanced for those with supplemental coverage. Older persons who are eligible for both Medicare and Medicaid benefits were 1.24 times as likely to use health care services as those without supplementary coverage, while those with Medigap were about 1.06 times as likely. (37) Older persons who have Medicare coverage only, 17.9 percent in 1986 (Table 20), have strong financial disincentives to use many health services. As mentioned earlier, Medicare's cost sharing provisions can be a major financial burden for many poor persons 65 and over.

Figure 4, from the Commonwealth Fund report, examines the characteristics of poor persons 65 and over with and without Medicaid coverage to supplement Medicare. The differences in terms of out-of-pocket expenditures are striking; in 1986, 68 percent of poor persons 65 and over without Medicaid coverage compared to 26 percent with Medicaid coverage spent more than 15 percent of their incomes on health-related services. Without Medicaid, poor

persons 65 and over spent an average of 24 percent of their annual income on out-of-pocket expenditures, more than double the proportion spent by those older persons who qualified for Medicaid. (In addition to Medicare's cost sharing expenses, these out-of-pocket expenditures also include the cost of private Medigap insurance. Almost 60 percent of poor persons 65 and over without Medicaid purchase private supplemental insurance.) Exacerbating the situation for low-income older persons are studies indicating that they are in poorer health than higher income older persons and are more likely to suffer from chronic illness. (35 37) As a result of the findings mentioned previously, the Commonwealth Fund Commission on Elderly People Living Alone recommended that all poor older persons be covered by the Medicaid program and that all near-poor older persons have the option of purchasing Medicaid on a contributory basis. (35)

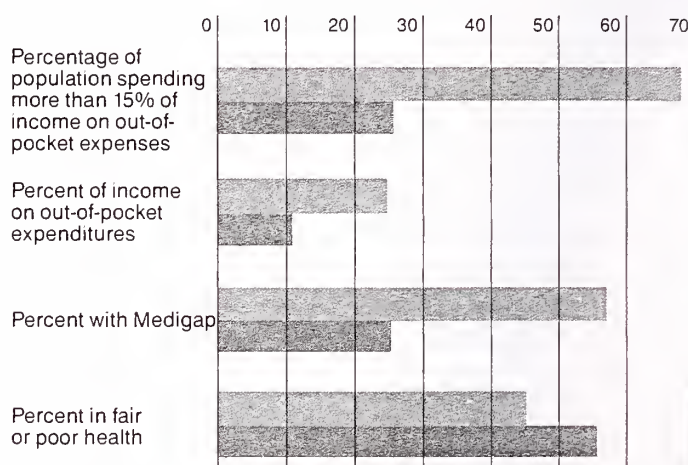
Older Hispanics are especially vulnerable to poor health, in part, due to their high poverty rates. A national survey of 2,299 Hispanics age 65 and over was conducted in 1988 to obtain more information on the economic, health, and social statistics of older Hispanics in

the United States. (38) Only 83 percent of all older Hispanics received Medicare coverage, compared to 96 percent of all older persons. Of those with Medicare, 28 percent had no supplemental insurance to cover cost-sharing expenditures or services not covered by Medicare, compared to 20 percent of all older persons. Finally, the survey indicated that 8 percent of Hispanics age 65 and over had no private or public health insurance (including Medicare) compared to 1 percent in the general older population. The survey commissioners concluded that "elderly Hispanic Americans generally are not sharing in the economic prosperity enjoyed by other elderly Americans." (38)

In summary, it is evident that Medicare coverage, by itself, does not protect enrollees from substantial out-of-pocket costs for health care. Almost 20 percent of Medicare enrollees are without private Medigap or Medicaid supplementary coverage. This vulnerable group of older Americans is generally sicker, older, poorer and more likely to be a person from a racial/ethnic minority than their counterparts with supplemental insurance coverage.

Figure 4

Characteristics of poor elderly people by Medicaid coverage, 1986.



Source: A Report of the Commonwealth Fund Commission on Elderly People Living Alone, "Medicare's Poor: Filling the Gaps in Medical Coverage for Low-Income Elderly Americans," Nov 20, 1987, Figure 19, p. 38.



 Poor Elderly without Medicaid Coverage
 Poor Elderly with Medicaid Coverage

Table 1

National health expenditures: aggregate amounts for selected calendar years 1965, 1970, 1975, 1980, 1985, 1986 and 1987

(Dollar amounts in billions)

	1965	1970	1975	1980	1985	1986	1987
Total	\$41.9	\$75.0	\$132.7	\$248.1	\$422.6	\$458.2	\$500.0
Percent of GNP	5.9	7.4	8.3	9.1	10.6	10.9	11.1
Health services and supplies	\$38.4	\$69.6	\$124.3	\$236.2	\$407.2	442.0	\$483.2
Personal health care	35.9	65.4	117.1	219.7	371.3	404.0	442.6
Hospital care	14.0	28.0	52.4	101.6	167.2	179.6	194.7
Physicians' services	8.5	14.3	24.9	46.8	82.8	92.0	102.7
Dentists' services	2.8	4.7	8.2	15.4	27.1	29.6	32.8
Other professional services	1.0	1.6	2.6	5.7	12.4	14.1	16.2
Drugs and medical supplies	5.2	8.0	11.9	18.8	28.7	30.6	34.0
Eyeglasses and appliances	1.2	1.9	3.2	5.1	7.5	8.2	9.5
Nursing home care	2.1	4.7	10.1	20.4	35.0	38.1	40.6
Other health services	1.1	2.1	3.8	5.9	10.8	11.9	12.0
Program administration and net cost of private health insurance	1.7	2.8	4.0	9.2	23.6	24.5	25.9
Government public health activities	.8	1.4	3.2	7.3	12.3	13.4	14.7
Research, and construction of medical facilities	3.5	5.4	8.4	11.9	15.4	16.3	17.1

Note: Totals may not add due to rounding.

Source: Background Material and Data on Programs Within the Jurisdiction of the Committee on Ways and Means, 1989 Edition, U.S. Government Printing Office, Mar 15, 1989, WMCP 101-4, Table 1, p. 254.

Table 2

National health expenditures: in constant 1987 dollars, for selected calendar years
(Dollar amounts in billions)

	1965	1970	1975	1980	1985	1986	1987
Total	\$150.9	\$219.6	\$280.2	\$342.0	\$446.2	\$474.9	\$500.0
Health services and supplies	138.3	203.8	262.5	325.6	429.9	458.1	483.2
Personal health care	129.3	191.5	247.3	302.9	392.0	418.7	442.6
Hospital care	50.4	82.0	110.6	140.1	176.5	186.2	194.7
Physicians' services	30.6	41.9	52.6	64.5	87.4	95.4	102.7
Dentists' services	10.1	13.8	17.3	21.2	28.6	30.7	32.8
Other professional services	3.6	4.7	5.5	7.9	13.1	14.6	16.2
Drugs and medical supplies	18.7	23.4	25.1	25.9	30.3	31.7	34.0
Eyeglasses and appliances	4.3	5.6	6.8	7.0	7.9	8.5	9.5
Nursing home care	7.6	13.8	21.3	28.1	37.0	39.5	40.6
Other health services	4.0	6.1	8.0	8.1	11.4	12.3	12.0
Program administration and net cost of private health insurance	6.1	8.2	8.4	12.7	24.9	25.4	25.9
Government public health activities	2.9	4.1	6.8	10.1	13.0	13.9	14.7
Research, and construction of medical facilities	12.6	15.8	17.7	16.4	16.3	16.9	17.1

Note: For the years preceding 1980, the consumer price indices (CPIs) used to calculate constant dollar expenditures are for urban wage earners and clerical workers. For 1980-87, the consumer price indices are for all urban consumers.

Source: Background Material and Data on Programs Within the Jurisdiction of the Committee on Ways and Means, 1989 Edition, U.S. Government Printing Office, Mar 15, 1989, WMCP 101-4, Table 2, p. 255.

Table 3

National health expenditures: per capita amounts, in constant 1987 dollars, for selected calendar years

(Dollar amounts per capita)

	1965	1970	1975	1980	1985	1986	1987
Total	\$738	\$1,022	\$1,246	\$1,453	\$1,805	\$1,904	\$1,987
Health services and supplies	677	949	1,168	1,384	1,739	1,837	1,919
Personal health care	634	890	1,100	1,288	1,586	1,679	1,758
Hospital care	249	381	492	596	714	746	773
Physicians' services	151	193	234	274	354	382	408
Dentists' services	50	64	76	90	116	123	130
Other professional services	18	20	25	33	53	58	64
Drugs and medical supplies	90	108	112	110	122	126	135
Eyeglasses and appliances	22	26	30	30	32	34	37
Nursing home care	36	64	95	120	149	159	161
Other health services	18	29	36	34	46	50	48
Program administration and net cost of private health insurance	29	38	38	54	101	102	103
Government public health activities	14	20	30	43	53	56	58
Research and construction of medical facilities	61	73	78	70	65	67	68
Average annual [percentage increase]	65-70	70-75	75-80	80-85	65-87	85-87	86-87
Total	6.7	4.0	3.1	4.4	4.6	4.9	4.4
Health services and supplies	7.0	4.2	3.5	4.7	4.8	5.0	4.5
Personal health care	7.0	4.3	3.2	4.3	4.7	5.5	4.7
Hospital care	8.9	5.2	3.9	3.7	5.3	4.0	3.6
Physicians' services	5.0	3.9	3.2	5.3	4.6	7.4	6.8

Note: For the years preceding 1980, the consumer priced indices (CPIs) used to calculate constant dollar expenditures are for urban wage and clerical workers. For 1980-1987, the consumer price indices are for all urban consumers.

Source: Background Material and Data on Programs Within the Jurisdiction of the Committee on Ways and Means 1989 Edition, U.S. Government Printing Office Mar 15, 1989, WMCP 101-4, Table 4, p. 257.

Table 4

Total health expenditure as a percentage of gross domestic product (GDP), per capita health spending and percent of health expenditures publicly financed, 23 selected industrialized countries (In percent)

	1960	1965	1970	1975	1980	1985	1986	Per capita 1986	Public 1986
Australia	4.6	4.9	5.0	5.7	6.6	6.8	6.8	877	73.0
Austria	4.6	5.0	5.4	7.3	7.9	8.2	8.0	903	66.1
Belgium	3.4	3.9	4.0	5.8	6.6	7.2	7.1	826	76.9
Canada	5.5	6.1	7.2	7.3	7.4	8.4	8.5	1,370	76.0
Denmark	3.6	4.8	6.1	6.5	6.8	6.1	6.1	800	83.9
Finland	4.2	4.9	5.6	6.2	6.3	7.3	7.5	900	77.3
France	4.2	5.2	5.6	6.7	7.4	8.4	8.5	1,039	79.2
Germany	4.7	5.1	5.5	7.8	7.9	8.2	8.1	1,031	78.1
Greece	2.9	3.1	4.0	4.0	4.2	4.2	3.9	245	94.8
Iceland	5.9	6.0	8.7	11.1	6.9	7.8	7.5	1,072	83.3
Ireland	4.0	4.4	5.6	7.7	8.5	8.0	7.9	549	87.6
Italy	3.3	4.0	4.8	5.8	6.8	6.7	6.7	764	78.0
Japan	3.0	4.5	4.6	5.6	6.6	6.6	6.7	831	72.9
Luxembourg	—	—	—	—	—	—	—	—	—
Netherlands	3.9	4.4	6.0	7.7	8.2	8.3	8.3	984	78.7
New Zealand	4.4	4.5	5.1	6.4	7.2	—	6.9	715	81.1
Norway	3.3	3.9	5.0	6.7	6.6	6.4	6.8	1,021	97.3
Portugal	—	—	—	—	—	—	—	—	—
Spain	2.3	2.7	4.1	5.1	5.9	6.0	6.0	486	71.5
Sweden	4.7	5.6	7.2	8.0	9.5	9.4	9.1	1,195	90.9
Switzerland	3.3	3.8	5.2	7.1	7.2	7.9	8.0	1,217	67.7
United Kingdom	3.9	4.1	4.5	5.5	5.8	6.1	6.2	711	86.2
United States	5.2	6.0	7.4	8.4	9.2	10.7	11.1	1,926	40.8
Mean	4.1	4.6	5.4	6.7	7.1	7.3	7.3	NA	78.3

Source: Background Material and Data on Programs Within the Jurisdiction of the Committee on Ways and Means, 1989 Edition, U.S. Government Printing Office Mar 15, 1989, WMCP 101-4, Table 34, p. 286.

Table 5

Personal health care expenditures: aggregate amounts and percentage distribution for selected calendar years 1965, 1970, 1975, 1980, 1985, 1986 and 1987

	1965	1970	1975	1980	1985	1986	1987
Amount in billions of dollars							
Total	\$35.9	\$65.4	\$117.1	\$219.1	\$371.3	\$404.0	\$442.6
Private	28.0	42.9	70.9	133.2	222.9	244.1	267.3
Private health insurance	8.7	15.3	31.2	67.5	113.0	122.9	139.1
Patient direct payments	18.5	26.5	38.1	63.0	105.3	116.1	123.0
Philanthropy and in-plant health services	0.8	1.1	1.6	2.7	4.6	5.0	5.3
Public	7.9	22.4	46.3	86.5	148.3	160.0	175.3
Federal	3.6	14.5	31.4	62.5	112.7	121.8	131.2
State and local	4.3	7.9	14.9	24.0	35.7	38.1	44.1
Percentage distribution							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Private	78.0	65.6	60.5	60.6	60.0	60.3	60.4
Private health insurance	24.2	23.4	26.7	30.7	30.4	30.4	31.4
Patient direct payments	51.6	40.5	32.5	28.7	28.4	28.7	27.8
Philanthropy and in-plant health services	2.2	1.7	1.3	1.2	1.2	1.2	1.2
Public	22.0	34.3	39.5	39.3	39.9	39.6	39.6
Federal	10.1	22.2	26.8	28.4	30.3	30.3	29.6
State and local	11.9	12.1	12.7	10.9	9.6	9.4	10.0

Note: Totals may not add due to rounding.

Source: Background Material and Data on Programs Within the Jurisdiction of the Committee on Ways and Means, 1989 Edition, U.S. Government Printing Office, Mar 15, 1989, WMCP 101-4, Table 5, p. 258.

Table 6

Characteristics of persons with high health care expenditures, 1970, 1977 and 1980

Characteristics	Top 1 percent of persons ranked by expenditures			Top 5 percent of persons ranked by expenditures			Total U.S. population		
	1970	1977	1980	1970	1977	1980	1970	1977	1980
Female	55.4%	47.8%	50.4%	60.1%	58.1%	56.1%	50.8%	51.6%	51.7%
Black	8.2	8.8	9.6	6.7	9.4	10.4	11.5	9.2	11.7
Over age sixty-five	32.1	40.1	43.4	31.0	27.8	31.0	10.1	10.5	10.6
On Medicaid or public assistance	36.8	20.6	36.5	19.1	16.4	25.2	9.2	9.5	15.6
Fair or poor perceived health	47.0	45.3	50.8	39.9	41.4	39.9	16.2	13.7	13.0
Fifteen or more disability days	84.9	95.6	94.9	68.7	81.9	83.2	11.9	19.4	20.0

Source: Department of Health and Human Services, National Center for Health Services Research, "How the U.S. Spent Its Health Care Dollars: 1929-1980," Health Affairs, Fall 1988, Exhibit 2, p. 54.

Table 7

Sources of health insurance, by race and age, 1985

	Total	Employ- ment- related*	Public, not employ- ment- related**	Other, neither employ- ment- related nor public***	Unin- sured
Population (in millions)					
Black					
All Ages	28.2	13.2	7.8	1.0	6.3
17 and under	9.5	4.0	2.9	0.2	2.4
18-64	16.4	9.0	2.8	0.7	3.8
65 and over	2.2	0.2	2.0	****	0.1
Non-Black					
All Ages	206.0	127.7	32.3	15.2	30.8
17 and under	53.2	35.7	4.4	3.0	10.0
18-64	128.2	89.6	6.2	11.9	20.6
65 and over	24.6	2.4	21.7	0.3	0.2
Percentage					
Black					
All Ages	100	47	28	3	22
17 and under	100	42	31	2	25
18-64	100	55	17	4	23
65 and over	100	8	89	1	2
Non-Black					
All Ages	100	62	16	7	15
17 and under	100	67	8	6	19
18-64	100	70	5	9	16
65 and over	100	10	88	1	1

Note: Details may not add to totals because of rounding.

* This category includes respondents covered by private insurance plans sponsored by a current employer or union, and those covered by CHAMPUS (Civilian Health and Medical Program of the Uniformed Services). A small number of veterans who have no insurance, but who receive medical care from Veterans Administration facilities are included in this category because the data do not allow them to be separated from people covered by CHAMPUS. All respondents with employment-related coverage, whether or not they had public or other coverage, were classified in this category.

** This category includes respondents covered by Medicaid, Medicare, or both, provided that they did not have employment-related coverage.

*** This category includes respondents covered by individual insurance plans, provided that they were not covered by employment-related or public plans.

**** Less than 50,000.

Source: Stephen H. Long, "Public vs. Employment-Related Health Insurance: Experience and Implications for Black and Non-Black Americans," *Milbank Quarterly*, Vol. 65, Supplement 1, 1987, Table 1, p. 202, 203.

Table 8

Health insurance coverage status by age and race: fourth quarter, 1985

Characteristic	Total (thous.)	Percent covered by health insurance			Not covered by health insurance	
		Total	Private	Related to employment ¹	Number (thous.)	Per- cent
Total	235,520	86.7	76.5	62.5	31,285	13.3
Age						
Less than 16 years	55,612	84.5	70.8	62.2	8,616	15.5
16 to 24 years	34,596	78.6	70.7	55.0	7,389	21.4
25 to 34 years	41,363	83.6	77.5	70.5	6,786	16.4
35 to 44 years	32,133	89.1	83.4	76.0	3,514	10.9
45 to 54 years	22,459	89.9	84.2	73.8	2,273	10.1
55 to 64 years	22,135	88.5	81.3	66.1	2,553	11.5
65 years and over	27,222	99.4	75.3	31.9	154	0.6
Race and Spanish origin						
White	200,083	87.6	79.6	64.9	24,840	12.4
Black	28,496	80.7	55.7	46.2	5,501	19.3
Spanish origin ²	14,175	73.0	55.2	49.3	3,822	27.0

¹ Current or past employment of self or relative.² Persons of Spanish origin may be of any race.

Source: U.S. Department of Commerce, Bureau of the Census, "Disability, Functional Limitations, and Health Insurance Coverage: 1984/85," Current Population Reports, Household Economic Studies, Series P-70, No. 8. Data from the Survey of Income and Program Participation, Table 1, p. 10.

Table 9

Population under age 65 without health insurance, 1980-1988

Year	Nonelderly population in millions	Nonelderly uninsured in millions	Percent uninsured
1980	199.0	29.6	14.9
1981	200.6	NA	NA
1982	202.1	30.7	15.2
1983	203.9	32.7	16.0
1984	205.6	35.0	17.0
1985	207.2	36.8	17.8
1986	209.4	36.9	17.6
1987	211.0	37.1	17.6
1988	212.6	35.0	16.5

NA: Not available.

Note: The March 1988 CPS survey was changed so that the 1988 estimate cannot be compared with the 1987 estimate.

Source: Background Material and Data on Programs Within the Jurisdiction of the Committee on Ways and Means, 1989 Edition, U.S. Government Printing Office, Mar 15, 1989, WMCP 101-4, Table 18, p. 272.

Table 10

Percent distribution of uninsured under age 65 by selected population characteristics: United States, 1987

Population characteristics	Population in thousands	Percent without insurance	Percent distribution of all uninsured under age 65
All persons under 65 ¹	209,981	17.4	100.0
Age in years			
Less than 6	18,130	16.6	9.9
6 to 18	48,976	17.0	21.1
19 to 24	22,675	30.2	18.8
25 to 54	98,155	15.7	42.2
55 to 64	22,046	13.4	8.1
Sex			
Male	103,607	18.4	52.1
Female	106,374	16.4	47.9
Racial/Ethnic Background			
White	158,656	14.2	61.6
Black	26,028	23.8	17.0
Hispanic	17,888	32.9	16.1
Marital status (adults)			
Married	89,502	12.8	31.4
Single/Never married	39,336	26.1	28.1
Widowed	3,972	21.2	2.3
Divorced	13,170	23.1	8.3
Separated	3,710	27.2	2.8
Relation to employee			
Working adult	113,154	15.6	48.5
Nonworking spouse	14,449	17.2	6.8
Child of working adult	54,836	15.3	23.0
All others	27,542	28.8	21.7
Place of residence			
20 largest SMSAs	60,165	16.9	27.8
Other SMSA	99,874	16.5	45.1
Other	49,942	19.8	27.1
U.S. Census region			
Northeast	43,637	12.8	15.3
North Central	52,461	12.6	18.1
South	71,163	21.3	41.4
West	42,720	21.5	25.2

¹Includes persons with other race/ethnicity not shown below.

Source: P. Short, A. Monheit, and K. Beauregard, "A Profile of Uninsured Americans," Department of Health and Human Services Pub. No. (PHS)89-3443, National Medical Expenditures Survey Research Findings 1, Sep 1989, Table 14, p. 9.

Table 11

Percent distribution of uninsured persons under age 65 by employment characteristics of the working adult, United States, 1987

Employment characteristic of working adult ¹	Population under age 65 in families with at least one working adult (in thousands)	Percent uninsured	Percent of all uninsured under age 65
Total ²	180,524	15.6	76.9
Employment status			
Full-time	133,068	12.7	46.2
Part-time	22,248	24.1	14.7
Self-employed	23,509	22.9	14.7
Type of industry			
Agriculture	4,631	29.6	3.8
Mining	1,743	*10.0	*0.5
Construction	12,587	30.6	10.6
Manufacturing	36,531	10.3	10.3
Transportation, communication, utilities	15,236	10.4	4.3
Sales	31,223	21.4	18.3
Financial services	10,883	8.3	3.5
Repair services	10,459	21.6	6.2
Personal services	5,425	31.5	4.7
Entertainment	1,772	30.2	1.5
Professional services	34,175	10.5	9.8
Public administration	11,408	7.1	2.2
Union affiliation			
Member	16,720	5.2	2.4
All others	161,566	16.5	72.9
Size of establishment			
Less than 10 workers	46,940	26.3	33.7
10 to 25 workers	27,273	17.8	13.3
26 to 100 workers	34,653	12.3	11.7
101 to 500 workers	30,956	7.1	6.0
More than 500 workers	28,201	6.1	4.7
Hourly wage			
\$3.50 or less	9,228	30.1	7.6
\$3.51 to \$5.00	22,746	30.4	19.0
\$5.01 to \$10.00	61,112	14.6	24.4
\$10.01 to \$15.00	36,373	6.6	6.5
Over \$15.00	26,304	5.1	3.7

¹Working adults are classified according to their own employment characteristics. Nonworking spouses and children are classified according to the characteristics of the worker. Children of two working parents are classified according to the characteristics of the father.

²Includes unknown employment status, industry, establishment size, union membership, or wages.

* Relative standard error is greater than or equal to 30 percent.

Source: P. Short, A. Monheit, and K. Beauregard, "A Profile of Uninsured Americans," Department of Health and Human Services Pub. No. (PHS) 89-3443, National Medical Expenditures Survey Research Findings 1, Sep 1989, Table 6, p. 13.

Table 12

Percent of workers not obtaining health insurance from their own jobs, by workers' earnings: 1986

	Percent not covered
Workers' earnings:	
Less than \$5,000	88.6
\$5,000 to \$9,999	62.2
\$10,000 to \$14,999	36.5
\$15,000 to 19,999	22.7
\$20,000 to \$24,999	18.2
\$30,000 to \$49,999	12.3
\$50,000 or more	15.2

Source: Background Material and Data on Programs Within the Jurisdiction of the Committee on Ways and Means, 1989 Edition, U.S. Government Printing Office, Mar 15, 1989, WMCP 101-4, Table 22, p. 274.

Table 13

Recipients and Medicaid medical vendor payments, according to basis of eligibility: United States, selected years 1972-1987

Basis of eligibility	1972 ¹	1975 ¹	1980 ²	1984 ²	1985 ²	1986 ²	1987 ²
Recipients							
Number in millions							
All recipients	17.6	22.0	21.6	21.6	21.8	22.4	23.2
Percent distribution							
Total	100.0	100.0	—	—	—	—	—
Aged ³	18.8	16.5	15.9	15.0	14.0	14.0	14.1
Blind and disabled	9.8	11.2	13.5	13.5	13.8	14.2	14.6
Adults in AFDC ⁴ families	17.8	20.6	22.6	26.0	25.3	25.1	24.3
Children in AFDC ⁴ families	44.5	43.7	43.2	44.7	44.7	44.4	44.1
Other Title XIX ⁵	9.0	8.2	6.9	5.5	5.6	6.1	6.1
Vendor payments							
Amount in billions							
All payments	\$6.3	\$12.2	\$23.3	\$33.9	\$37.5	\$40.9	\$45.2
Percent distribution							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Aged ³	30.6	35.6	37.5	37.8	37.6	36.9	35.7
Blind and disabled	22.2	25.7	32.7	35.3	35.9	36.4	37.2
Adults in AFDC ⁴ families	15.3	16.8	13.9	13.0	12.7	11.9	12.4
Children in AFDC ⁴ families	18.1	17.9	13.4	11.7	11.8	12.5	12.3
Other Title XIX ⁵	13.9	4.0	2.6	2.1	2.1	2.4	2.4

¹ Data for fiscal year ending June 30.

² Data for fiscal year ending September 30. Recipients included in more than one category.

³ 65 years and over.

⁴ Aid to Families with Dependent Children.

⁵ Includes some participants in Supplemental Security Income program and other people deemed medically needy in participating States.

Source: National Center for Health Statistics, "Health, United States, 1988," Department of Health and Human Services Pub. No. (PHS) 89-1232, Washington, U.S. Government Printing Office, Mar 1989, Table 123, p. 177.

Table 14

Medicaid coverage of poor children under age 18, 1979-1986

Year	Number of poor children (in thousands)	Number of poor children with Medicaid coverage (in thousands)	Percentage of poor children with Medicaid coverage
1979	10,111	4,907	48.5
1980	11,764	5,525	47.0
1981	12,505	5,811	46.5
1982	13,647	6,429	47.1
1983	13,807	6,693	48.5
1984	13,419	6,622	49.3
1985	13,010	6,569	50.5
1986	12,876	6,676	51.8

Source: Congressional Research Service, Committee on Energy and Commerce, U.S. House of Representatives, "Medicaid Source Book: Background Data and Analysis," Nov 1988, U.S. Government Printing Office, Table B-9, p. 336.

Table 15

Share of the poor with medical coverage, other health insurance coverage, or no health insurance coverage by age, family type and race, 1986

	Covered by Medicaid			Other insurance only	No health insurance	Total
	Medicaid only	Medicaid and other insurance	Total			
Distribution (in percent)						
Age:						
Under 18	47.9	3.9	51.8	15.3	32.8	100
18 to 64	29.4	4.6	34.1	26.2	39.8	100
65 and over	0.0	31.3	31.3	66.4	2.2	100
Family type:						
Families with related children under 18:						
Single parent	60.6	4.3	64.9	10.0	25.0	100
Two parent	26.0	5.5	31.5	30.0	38.5	100
Children 18 and over and others	35.3	4.7	40.0	13.3	46.7	100
Families without related children under 18:						
In families	12.5	9.5	22.0	43.5	34.5	100
Single individuals	11.6	13.4	25.0	40.5	34.5	100
Race ethnicity:						
White (non-Hispanic)	26.1	7.8	33.8	34.6	31.5	100
Black (non-Hispanic)	45.9	7.2	53.2	15.5	31.3	100
Hispanic	38.2	4.4	42.6	14.8	42.6	100
Other (non-Hispanic)	35.2	9.1	44.3	21.1	34.4	100
Total	33.7	7.1	40.9	25.8	33.3	100

Note: Estimates of insurance coverage for families with related children are for parents and related children in these families; all other family members are found in the category "children 18 and over and others." Poverty Status of an individual is based on total family income. The CPS does not ask questions about dual health insurance coverage. Individuals responding that they were covered by more than one form of health insurance in 1986 may either have had dual coverage, or different forms of insurance at different times of the year. The "Other insurance only" category includes Medicare, and CHAMPUS as well as private health insurance coverage.

Source: Congressional Research Service, Committee on Energy and Commerce, U.S. House of Representatives, "Medicaid Source Book: Background Data and Analysis," Nov 1988, U.S. Government Printing Office, Table A-2, p. 282.

Table 16

Medicare enrollment, persons served, and reimbursements for Medicare enrollees 65 years and over, according to selected characteristics: United States, 1967-1986

Characteristic	Enrollment in millions ¹			Persons served per 1,000 enrollees ²			Reimbursements per person served ³			Reimbursements per enrollee ³		
	1967	1977	1986	1967	1977	1986	1967	1977	1986	1967	1977	1986
Total ⁴	19.5	23.8	28.2	367	570	732	\$592	\$1,332	\$2,870	\$217	\$759	\$2,146
Age												
65-66 years	2.8	3.3	3.7	300	533	652	496	1,075	2,118	149	573	1,453
67-68 years	2.6	3.2	3.5	326	511	656	521	1,173	2,441	170	599	1,604
69-70 years	2.4	2.9	3.3	339	531	689	530	1,211	2,579	180	643	1,776
71-72 years	2.3	2.6	3.1	351	555	719	560	1,228	2,777	197	681	2,032
73-74 years	2.1	2.3	2.7	369	576	735	574	1,319	2,910	212	759	2,199
75-79 years	3.9	4.5	5.5	398	597	768	624	1,430	3,100	248	853	2,433
80-84 years	2.2	3.0	3.5	430	623	808	693	1,549	3,310	298	965	2,749
85 years and over	1.3	2.1	2.9	465	652	827	740	1,636	3,477	345	1,068	2,946
Sex												
Male	8.3	9.6	11.3	357	546	691	647	1,505	3,272	231	821	1,956
Female	11.3	14.2	16.9	373	586	759	554	1,223	2,626	207	717	2,036
Race ⁵												
White	17.4	21.1	24.7	375	576	738	593	1,328	2,842	222	765	2,139
Other	1.5	2.1	2.6	260	514	683	557	1,404	3,185	145	722	2,252
Geographic region ⁶												
Northeast	5.1	5.7	6.4	385	613	775	604	1,426	2,933	233	874	2,306
Midwest	5.6	6.3	7.2	352	541	729	599	1,401	2,894	211	757	2,141
South	5.6	7.5	9.2	351	556	736	528	1,198	2,744	186	666	2,073
West	2.9	3.8	4.9	455	632	727	620	1,341	3,051	282	848	2,292

¹ Includes fee-for-service and Health Maintenance Organization (HMO) enrollees.

² Excludes HMO enrollees.

³ Excludes amounts for HMO services.

⁴ Includes the U.S. population residing in the United States, Puerto Rico, Virgin Islands, Guam, other outlying areas, and foreign countries and residence unknown.

⁵ Excludes persons of unknown race.

⁶ Includes the resident population of the United States but not residence unknown.

Source: National Center for Health Statistics, "Health, United States, 1988," Department of Health and Human Services Pub. No. (PHS) 89-1232. Washington, U.S. Government Printing Office, Mar 1989, Table 121, p. 175.

Table 17

Average annual income and expenditures on health care of all consumer units, 1986

Characteristic	Income before taxes ¹	Expenditures on health care	
		In Dollars	Percent of Income
All consumer units	\$25,481	1,062	4.2
Age of reference person:			
Under 25 years old	12,445	336	2.7
25-34 years old	25,831	686	2.6
35-44 years old	34,232	1,005	2.9
45-54 years old	33,447	1,172	3.5
55-64 years old	28,413	1,303	4.6
65-74 years old	17,893	1,537	8.6
75 years old and over	12,467	1,761	14.1
Region of residence:			
Northeast	26,594	1,070	4.0
Midwest	23,325	996	4.3
South	24,587	1,114	4.5
West	28,602	1,046	3.6
Size of consumer unit:			
One person	14,246	716	5.0
Two persons	26,686	1,240	4.7
Three persons	29,532	1,128	3.8
Four persons	35,742	1,199	3.4
Five persons	31,874	1,230	3.9
Six persons or more	29,795	1,152	3.9
Income before taxes:			
Complete income reporters ¹	25,481	1,071	4.2
Quintiles of income:			
Lowest 20 percent	3,808	710	18.6
Second 20 percent	10,767	925	8.6
Third 20 percent	19,534	1,129	5.7
Fourth 20 percent	31,630	1,116	3.5
Highest 20 percent	61,489	1,471	2.4
Incomplete reporting of income	(¹)	980	—

¹ Income values are derived from "complete income reporters" only. Represents the combined income of all consumer unit members 14 years or over during the 12 months preceding the interview. A complete reporter is a consumer unit providing values for at least one of the major sources of income.

Note: Based on Consumer Expenditure Interview Survey. In interpreting the expenditure data, several factors should be considered. First, the data are averages for the total civilian noninstitutional population. Second, expenditures reported here are direct out-of-pocket expenditures. Third, approximately 95 percent of all expenditures are covered in the Interview Survey. Excluded are nonprescription drugs, household supplies and personal care items.

Source: Abstracted from U.S. Bureau of the Census, Statistical Abstract of the United States, 1989 (109th edition) Washington, Table 708, p. 437.

Table 18

Type of health insurance coverage of retirees, percentage of retirees with private health insurance by selected characteristics: United States, 1987

Population characteristic	Retirees aged 55 or older (in thousands)	Percent distribution			
		Employment-related coverage		Other private coverage only	No private coverage
		Policy-holder	Dependent		
Total ¹	22,042	38.8	9.9	32.1	19.1
Age in years					
55-59	1,723	50.1	20.6	11.2	18.1
60-64	3,818	51.9	15.0	17.5	15.6
65-69	5,230	40.3	11.1	29.7	19.0
70-74	4,848	37.1	7.6	38.7	16.6
75 or older	6,424	28.1	4.9	43.5	23.6
Sex					
Male	12,547	47.1	4.2	29.4	19.3
Female	9,495	27.9	17.5	35.7	18.9
Ethnic/racial background					
White	19,530	40.3	10.5	34.2	15.1
Black	1,632	28.9	7.0	13.8	50.4
Hispanic	543	21.6	*4.4	18.6	55.5
Marital status					
Married	14,558	41.0	14.6	30.1	14.4
Single, never married	1,094	42.2	*0.3	28.0	29.5
Widowed	5,066	32.4	*1.1	39.2	27.1
Divorced/separated	1,324	37.7	*0.2	29.6	32.5
U.S. Census region					
Northeast	5,258	40.7	8.8	31.8	18.7
Midwest	5,269	41.6	10.3	32.7	15.4
South	7,210	34.5	9.5	34.4	21.7
West	4,305	40.3	11.6	28.0	20.1
Current employment status					
Employed	2,241	55.2	6.9	26.7	11.2
Not employed	19,801	37.0	10.3	32.7	20.0
Former industry of employment					
Agriculture	505	8.2	*7.5	51.6	32.7
Construction	1,169	33.2	5.9	37.0	23.9
Manufacturing	5,429	47.7	7.5	27.5	17.4
Transportation, communications, utilities	1,922	58.9	5.2	22.7	13.2
Sales	3,297	18.9	12.7	47.2	21.3
Financial services	828	34.3	14.5	29.5	21.7
Repair services	727	23.9	16.0	34.7	25.4
Personal services	797	9.0	11.5	44.1	35.4
Professional services	3,686	38.3	13.1	32.1	16.5
Public administration	1,989	59.2	6.2	18.5	16.2

Table 18

Type of health insurance coverage of retirees, percentage of retirees with private health insurance by selected characteristics: United States, 1987—Continued

Population characteristic	Retirees aged 55 or older (in thousands)	Percent distribution			
		Employment-related coverage		Other private coverage only	No private coverage
		Policy- holder	Depend- ent		
Former occupation					
Professional and technical	2,758	51.5	7.9	27.0	13.6
Managerial and administrative	2,903	40.8	8.0	38.2	13.0
Sales	1,890	18.7	14.4	48.8	18.1
Clerical	3,302	45.4	15.4	27.5	11.8
Craftsmen and foremen	2,990	48.2	6.1	28.1	17.6
Operatives	2,231	36.6	10.4	28.8	24.2
Transportation operatives	965	48.4	6.3	29.7	15.7
Service workers	2,372	23.4	12.0	33.6	31.0
Laborers (nonfarm)	794	35.9	*4.4	26.6	33.1

¹Includes persons whose former industry of employment is unknown and in mining, where the number of retirees was too small for reliable estimates.

* Relative standard error greater than 30 percent.

Source: National Center for Health Services Research, National Medical Expenditures Survey, "Health Insurance Coverage of Retired Persons," Department of Health and Human Services Pub. No. (PHS) 89-3444, Sep 1989, Tables 2 and 3, pp. 6-7.

Table 19

Private health insurance coverage of the population aged 65 and older with Medicare: Percent distribution by selected demographic characteristics and employment status, United States, 1987

Population characteristic	Popula- tion 65 years or older with Medicare (in thou- sands)	Percent distribution					
		Employment-related coverage				Other private coverage	No private coverage
		Retiree	Depend- ent of retiree	Active worker	Depend- ent of active worker		
Total ¹	27,149	20.6	10.5	2.4	1.3	40.6	24.6
Age in years							
65-69	8,905	23.2	12.6	5.8	2.6	33.0	22.7
70-74	7,405	23.8	11.9	1.1	0.8	41.3	21.1
75 or older	10,839	16.3	7.8	*0.5	0.6	46.3	28.5
Sex							
Male	11,177	33.5	3.1	3.3	1.3	35.9	22.9
Female	15,972	11.6	15.7	1.8	1.3	43.9	25.8
Racial background ²							
White	23,643	21.9	11.3	2.5	1.3	43.6	19.4
Black	2,211	13.1	6.2	2.0	*1.8	16.4	60.5
Marital status							
Married	15,117	23.6	15.0	2.6	2.2	38.7	18.0
Single/never married	1,074	25.9	*0.7	*3.7	NA	40.1	29.6
Widowed	9,411	15.3	*5.8	1.9	*0.3	44.5	32.3
Divorced/ separated	1,538	20.2	*2.1	*3.3	NA	35.9	38.5
Current employment status							
Employed	3,158	14.5	5.4	20.9	*1.5	40.8	16.8
Not employed	23,991	21.4	11.2	NA	1.3	40.6	25.6

¹Includes persons of unknown marital status or other or unknown ethnic/racial background.

²The number of elderly Hispanics with employment-related insurance was too small to permit reliable estimates.

*Relative standard error greater than 30 percent.

NA—Not applicable.

Source: National Center for Health Services Research, National Medical Expenditures Survey, "Health Insurance Coverage of Retired Persons," Department of Health and Human Services Pub. No. (PHS) 89-3444, Sep 1989, Table 5, p. 10.

Table 20

Health care coverage for persons 65 years of age and over, by type of coverage and selected characteristics: United States, 1980, 1982, and 1986

Characteristic	Medicare and private insurance			Medicare and Medicaid ¹			Medicare ²		
	1980	1982	1986	1980	1982	1986	1980	1982	1986
Percent of population									
Total ^{3, 4}	64.4	65.5	71.6	8.1	6.1	5.8	22.7	23.1	17.9
Age									
65-74 years	67.0	68.2	73.5	6.8	4.8	4.9	20.6	20.5	15.7
75 years and over	59.9	60.6	68.2	10.3	8.3	7.3	26.4	27.7	21.7
75-84 years	61.9	62.7	70.4	9.7	8.1	7.0	24.8	26.0	19.8
85 years and over	51.2	51.3	58.7	12.7	9.3	8.8	33.0	34.9	29.6
Sex ³									
Male	65.6	66.2	72.8	5.7	4.3	3.7	23.1	23.4	18.4
Female	63.6	65.0	70.8	9.6	7.3	7.3	22.4	23.0	17.5
Race ³									
White	68.3	68.9	75.4	6.6	4.8	4.5	21.0	21.6	16.1
Black	26.5	33.0	34.2	23.3	18.2	19.7	40.6	38.5	34.9
Family income ^{3, 5}									
Less than \$10,000	53.4	55.6	54.7	15.7	11.7	14.4	28.2	28.9	27.1
\$10,000-\$14,999	72.9	76.3	78.0	4.8	3.3	*3.9	19.1	17.3	15.5
\$15,000-\$19,999	74.1	74.1	82.8	3.9	1.8	*2.0	18.3	17.8	11.5
\$20,000-\$34,999	74.4	74.6	82.0	2.5	*1.2	*2.2	16.8	17.9	10.0
\$35,000 or more	71.9	73.7	77.5	2.2	*1.3	*1.4	18.3	16.0	13.9
Geographic region ³									
Northeast	67.4	66.6	74.1	5.6	4.1	4.1	22.3	23.3	17.0
Midwest	71.2	71.3	77.7	4.9	3.1	3.8	19.9	21.2	14.5
South	58.9	60.2	65.3	10.8	9.2	8.0	25.6	25.4	21.0
West	60.7	65.3	70.6	10.9	7.2	6.6	21.7	21.5	18.2
Location of residence ³									
Within MSA	64.2	66.1	71.7	7.5	5.0	5.2	23.0	22.8	17.8
Outside MSA	64.9	64.3	71.2	9.2	7.8	7.2	22.2	23.7	18.1

¹ Includes persons receiving Aid to Families with Dependent Children or Supplemental Security Income or those with current Medicaid cards.

² Includes persons not covered by private insurance or Medicaid.

³ Age adjusted.

⁴ Includes all other races not shown separately and unknown family income.

⁵ Family income categories for 1982 and 1986. Income categories in 1980 are less than \$7,000; \$7,000-\$9,999; \$10,000-\$14,999; \$15,000-\$24,999; \$25,000 or more.

* Relative standard error greater than 30 percent.

Notes: Persons with Medicare, private insurance, and Medicaid appear in both columns. Denominators include persons with unknown health insurance (0.8 percent in 1986). In 1986, 5.0 percent of all persons 65 years of age and over had no Medicare but only 0.6 percent were without health insurance.

Source: National Center for Health Statistics, "Health, United States, 1988," Department of Health and Human Services Pub. No. (PHS) 89-1232. Washington, U.S. Government Printing Office, Mar 1989; Table 118, p. 172.

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